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COVER SHEET
Barren Ridge Renewable Transmission Project
Final Environmental Impact Statement/
Environmental Impact Report
Kern and Los Angeles Counties, California

NEPA Co-Lead Agencies: USDA Forest Service, Angeles National Forest, and
USDOI Bureau of Land Management

CEQA Lead Agency: Los Angeles Department of Water and Power

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Abstract: The Forest Service (USFS), the Bureau of Land Management (BLM), and the Department of Water and Power (LADWP) have prepared this joint Environmental Impact Statement / Environmental Impact Report (EIS/EIR) for the proposed Barren Ridge Renewable Transmission Project (BRRTP). This action under the National Environmental Policy Act (NEPA) is in response to LADWP's application to the USFS for a special use authorization and to BLM for a right of way grant, with USFS and BLM as co-lead agencies under NEPA. LADWP is the lead agency under the California Environmental Quality Act (CEQA). LADWP is proposing the BRRTP to access renewable energy resources in the Tehachapi Mountains and Mojave Desert areas, and to improve reliability and upgrade transmission capacity. The BRRTP would be located in Kern and Los Angeles counties, and would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. This EIS/EIR evaluates the potential environmental effects of the proposed BRRTP and alternatives including the No Action Alternative and four action Alternatives. Alternative 2 has been selected by BLM and USFS as the agency preferred alternative under NEPA and has been identified by LADWP as the environmentally superior alternative under CEQA.

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SUMMARY

S.1 INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) is the nation's largest municipal utility serving over 3.8 million customers. Its service territory covers the City of Los Angeles and certain parts of the Owens Valley. In 2007, LADWP prepared an energy resource planning document called the Power System Integrated Resource Plan (IRP) that provided a framework for ensuring the future electrical energy needs of LADWP. The IRP recognizes the need to increase energy efficiency and conservation, reduce greenhouse gas emissions, and increase power generated from renewable energy sources. This should be accomplished while maintaining power system reliability and minimizing financial impact on the City ratepayers. The City's "GREEN LA Plan" is an action plan to lead the nation in fighting global warming and reducing the City's greenhouse gas emissions to 35% below the 1990 levels by the year 2030. The cornerstone of the GREEN LA Plan is the reduction of greenhouse gases by increasing the use of renewable energy.

The State of California has one of the most aggressive renewable energy programs in the country and has established a Renewable Portfolio Standard (RPS) policy requiring the increased production and use of renewable energy (such as wind, solar, small hydroelectric, biomass, and geothermal energy). As a component of the IRP, LADWP's RPS policy matches that of the State. To achieve a more environmentally sustainable energy resource mix and meet RPS goals, LADWP must access renewable energy sources, most of which are located in more remote areas (such as the Owens Valley, Mojave Desert, Tehachapi Mountains) where limited electrical infrastructure exists.

To achieve these objectives and bring this renewable power from these remote areas into Los Angeles' demand center, LADWP is proposing to construct and operate the Barren Ridge Renewable Transmission Project, the proposed project (BRRTP or Project). LADWP has developed the purpose and need for this Project in accordance with the National Environmental Policy Act (NEPA), and Project objectives in accordance with the California Environmental Quality Act (CEQA):

- Reduce the environmental impacts associated with greenhouse gas emissions and create a more sustainable environment.
- Assist LADWP in meeting RPS goals.
- Assist in meeting LADWP's future electrical energy demands.
- Allow interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert areas.
- Increase LADWP's system reliability and flexibility in the utilization of renewable energy sources.
- Enable the delivery of renewable energy to the City of Los Angeles.

The BLM's purpose and need is to respond to LADWP's application for a right-of-way grant to construct, operate, and decommission a transmission line on public lands in compliance with the Federal Land Policy and Management Act, BLM right-of-way regulations, and applicable federal laws.

The Project would be located in Los Angeles and Kern Counties, and would consist of the following five Project components:

1) Expanding existing Barren Ridge Switching Station;
2) Constructing a new switching station in Haskell Canyon;
3) Constructing 61 miles of a new 230 kilovolt (kV) double-circuit transmission line from the LADWP Barren Ridge Switching Station to Haskell Canyon;
4) Reconductoring 76 miles of the existing Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line with larger-capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation; and
5) Adding 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant.

It has been determined that the proposed Project is a major federal action and California governmental action that may have a significant impact upon the quality of the human environment, and the appropriate environmental analysis document is a joint Environmental Impact Statement / Environmental Impact Report (EIS/EIR). This Final EIS/EIR has been prepared by the U.S. Department of Agriculture, Forest Service (USFS) and the U.S. Department of the Interior, Bureau of Land Management (BLM), as Co-Lead Agencies under NEPA, and LADWP as the Lead Agency under CEQA. This action is in response to LADWP's application (1) to the USFS for a special use authorization, and (2) to the BLM for a right-of-way grant. The grant of these applications by the agencies is a federal action requiring compliance with NEPA. As a governmental agency within California, LADWP is required to comply with CEQA for its direct undertaking of discretionary governmental actions (CEQA Guidelines, Section 15002(b)).

S.2 PUBLIC SCOPING AND ALTERNATIVES DEVELOPMENT

S.2.1 PUBLIC SCOPING

Starting in spring 2008, public scoping for the BRRTP was conducted to determine the scope of issues to be addressed, and to identify the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed in the Draft EIS/EIR. The public suggested a number of alternatives to the Proposed Action that include system, design, and routing alternatives. The process used to identify, evaluate, and screen potential alternatives is described in Chapter 2 of this Final EIS/EIR. Alternatives that the public suggested include:

- Use of tubular steel monopoles instead of lattice steel structures
- Undergrounding of the transmission line
- Use of a single-tower system (multi-circuit towers) to accommodate the need for existing and proposed towers, as well as to minimize right-of-way (ROW) expansion by combining new and existing lines on one set of structures

- Use of Direct Current (DC) lines as an alternative to the proposed alternating current (AC)
- Consideration of niobium wire as an alternative to aluminum or copper wire for the conductor
- Generation of electricity within the City of Los Angeles to avoid long-distance electrical transmission distribution and impacts to rural communities, such as through the installation of solar panels
- Two localized routing alternatives were proposed by the public during the scoping period. The first, referred to as the Green Valley Re-route, was proposed by the residents of the unincorporated community of Green Valley and would be approximately one quarter-mile west of the unincorporated community of Green Valley along an existing fire road through National Forest System lands. This re-route would avoid possible impacts to the unincorporated community of Green Valley. The second routing suggestion, referred to as the 110th Street Re-route, was proposed by residents to occur along Segments F and H (see Figure S-1). The modification of Segment F would parallel 110th Street and connect Segments F and H instead of following along the existing transmission lines to Antelope Substation. This modification was proposed to follow property lines and avoid bisecting private property in the area.

S.2.2 ALTERNATIVES DEVELOPMENT

To determine which alternatives would be analyzed in this Final EIS/EIR, alternatives were evaluated as to whether they would:

1. Attain the purpose and need of the Project, as well as most of the basic objectives of the Project;
2. Have the potential to avoid or substantially lessen any of the significant or adverse effects of the Project; and
3. Be considered feasible.

Through scoping, subsequent public involvement efforts, and preparation of preliminary technical reports, all potentially significant environmental resource issues listed in Table S-1 were identified with the construction, operation, maintenance, and decommissioning of the proposed BRRTP.

TABLE S-1. SIGNIFICANT ENVIRONMENTAL RESOURCE ISSUES OF THE BRRTP

RESOURCE	ISSUES AND CONCERNS
Biological Resources	• Potential for adverse effects to rare, threatened, endangered, and special-status species. • Considerable concern for Riparian Conservation Areas and the spread of noxious weeds throughout Angeles National Forest lands. • Impacts to avian species and increased raptor predation of sensitive species due to the use of lattice towers. • Potential for loss of habitat.
Cultural Resources	• Impacts to historical, cultural, and archaeological resources in the Project area.

RESOURCE	ISSUES AND CONCERNS
Earth Resources	• Adverse impacts to soils throughout the Project area, including sedimentary rocks and fossils.
Water Resources	• Impacts to drainages, wetlands, Waters of the State, Waters of the U.S., and intermittent and ephemeral streams.
Land Use	• Acquisition of private property, eminent domain, and the expansion of transmission line rights-of-way and easements. • Decreased property values with additional transmission lines. • Conflicts with land use and recreation policies of the Angeles National Forest Land Management Plan.
Wildfire Suppression and Management	• Impacts to fire suppression efforts.
Recreation	• Impacts to recreational facilities and trails. • Impacts to the quality of the Antelope Valley California Poppy Reserve, Pacific Crest National Scenic Trail, Wild and Scenic River Corridor, and wilderness.
Visual Resources	• Adverse effects to visual resources of the area, especially those important to the character of the ridgelines, as well as views from homes, communities, businesses, trails, State Parks, the Angeles National Forest, BLM-managed lands, and other public lands.

NEPA and CEQA require an EIS/EIR to consider a reasonable range of alternatives to the Project that would meet the purpose and need of the Project, but avoid or substantially lessen any adverse effects of the Project. The scoping process, informational public meetings, and preliminary studies identified sixteen alternatives to the Proposed Action that were considered and eliminated from full analysis in the Final EIS/EIR. The alternatives are categorized as generation (four total), design (eight total), or routing alternatives (two total). Based on comments received during the public review of the Draft EIS/EIR, two additional alternatives were considered and eliminated from full analysis in this Final EIS/EIR. Chapter 2 provides a brief description of each alternative, the alternative's ability to meet the screening criteria, and a rationale for elimination of the alternative from full analysis in this Final EIS/EIR.

S.2.3 ALTERNATIVES DESCRIPTION

The following alternatives were identified as a reasonable range of alternatives to the Project that would feasibly meet the basic objectives of the Project, but avoid or substantially lessen any of the significant or adverse effects of the Project. The four action Alternatives and the No Action Alternative are described below.

Action Alternatives

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station. The action Alternatives are shown on Figure S-1.

Project Components Common To All Action Alternatives

Four of the BRRTP components would be common to all action Alternatives analyzed in this Final EIS/EIR. These common components are described in the sections below.

Expansion of the Existing Barren Ridge Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet, for a total station size of 485 feet by 500 feet (approximately 6 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area.

Construction of the Haskell Canyon Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Although the station is proposed on LADWP-owned property, some adjacent private property may need to be acquired to address cut and fill requirements during station design for the stability of the slopes as well as accommodate the transmission lines that would connect to the station. The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment.

Reconductor Existing 230 kV Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

Additional New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, the LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

New 230 kV Double-circuit Transmission Line

Only the new double-circuit 230 kV transmission line would differ between the action Alternatives. The new transmission line for each Alternative is discussed below.

Alternative 1

In addition to the four common Project components described above, Alternative 1 would include a new 83-mile-long 230 kV double-circuit transmission line. It would be the longest transmission line among the Alternatives. It would run from the Barren Ridge Switching Station to unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV Pacific Direct Current Intertie (PDCI) transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the Interstate 5 (I-5) utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station.

Within the Angeles National Forest (ANF) where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500, Bell 212, or Sikorsky Skycrane). Approximately eight miles of this Alternative would be constructed with helicopters.

Alternative 2 (Proposed Action)

Alternative 2 is LADWP's Proposed Action and would include the four common Project components described above and a new 61-mile 230 kV double-circuit transmission line. It would be the shortest transmission line alignment at 61 miles long. It would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto National Forest System lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines.

Although no specific areas have been identified for helicopter construction, within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500, Bell 212, or Sikorsky Skycrane). These areas would be identified during final design.

In areas where there are ROW expansion constraints due to existing primary residences, and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would avoid acquisition of residential property in the unincorporated communities of Willow Springs, Elizabeth Lake, and Green Valley.

LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, during construction of the three-circuit towers, a temporary transmission line approximately eight miles long would be constructed of wood and steel single poles, which would keep the BR-RIN circuit energized. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed. Construction would occur within a temporary 80- to 100-foot ROW. The majority of the temporary transmission line would be constructed along San Francisquito Canyon Road.

Alternative 2a

In addition to the four common Project components described above, Alternative 2a would include a new 63-mile 230 kV double-circuit transmission line. It would be very similar to the Alternative 2 transmission line, sharing the same alignment for 56 miles with Alternative 2, but the Alternative 2a transmission line would include a re-route to avoid the unincorporated community of Green Valley. This re-route around Green Valley would place a portion of the new transmission line outside of existing utility corridors through the ANF. The re-route would rejoin the Alternative 2 transmission line alignment south of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station.

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500, Bell 212, or Sikorsky Skycrane). Approximately four miles of this alternative would be constructed with helicopters.

Similar to Alternative 2, in areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake. These are the same areas that were identified for three-circuit tower mitigation for Alternative 2, with the exception of approximately five miles that would be left unchanged (BR-RIN would remain in place) through the unincorporated community of Green Valley.

Alternative 3

Alternative 3 would include the four common Project components described above and a new 76-mile 230 kV double-circuit transmission line. The Alternative 3 transmission line would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past Southern California Edison's (SCE) Antelope Substation. The route would then extend toward the City of Palmdale parallel to SCE's existing high-voltage transmission lines. It would turn sharply south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 500 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing approximately four miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station. Alternative 3 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; unincorporated communities of

Mojave, Willow Springs, Leona Valley, Antelope Acres, Agua Dulce, Castaic and Saugus; and cities of Lancaster, Palmdale, Santa Clarita, and Los Angeles.

LADWP is proposing to avoid ROW expansion and acquisition of residential property in the community of Willow Springs by constructing three-circuit towers from milepost 27.1 to 27.6. The new three-circuit towers would be constructed within existing ROWs and carry the existing BR-RIN circuit and two new BR-HC circuits.

Jurisdictions of the Action Alternatives

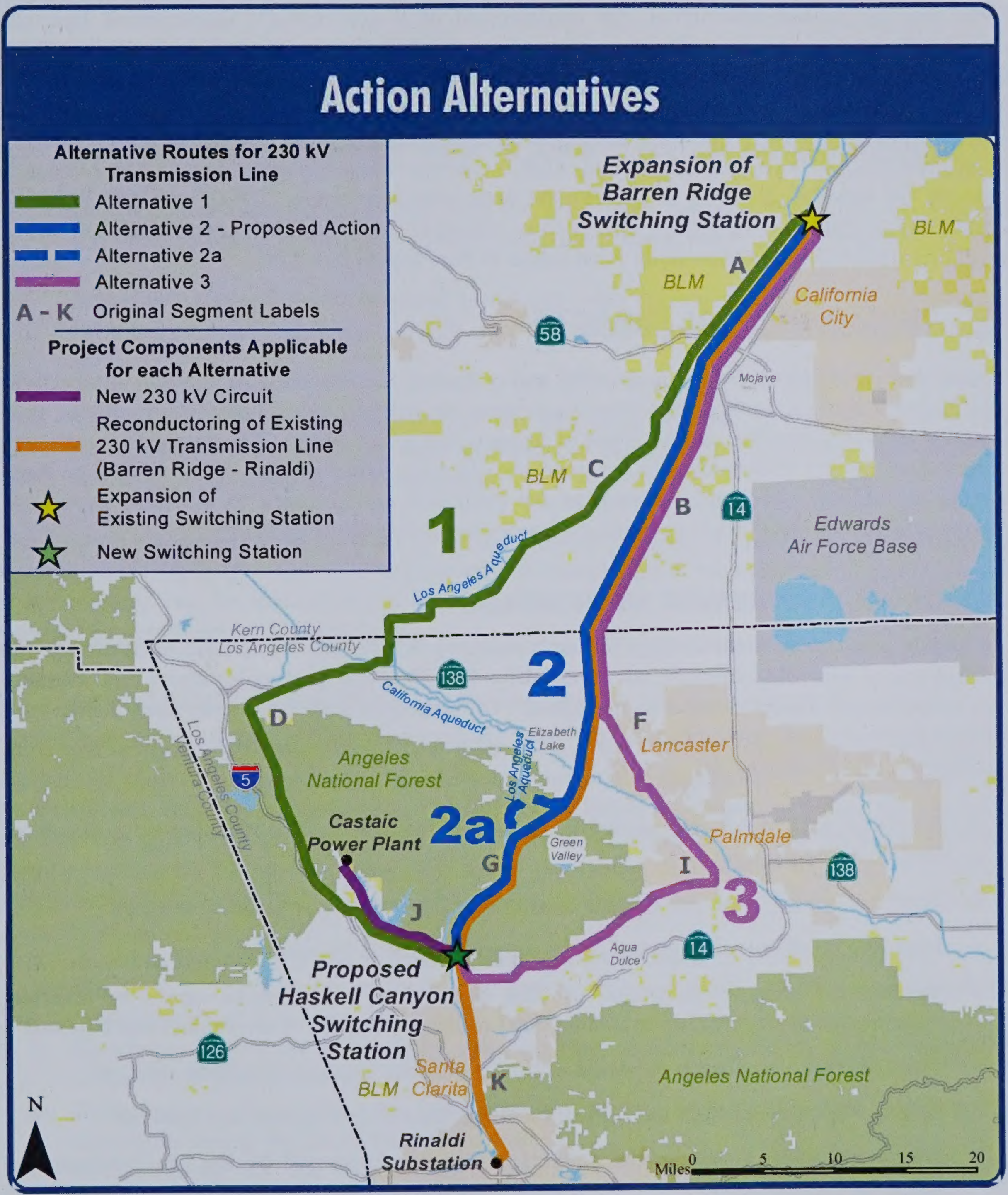
The land jurisdiction(s) crossed by each Alternative is presented in Table S-2.

TABLE S-2. JURISDICTIONS CROSSED BY ALTERNATIVE

	Alternative 1	Alternative 2 (LADWP's Proposed Action and Federal Agency Preferred Alternative)	Alternative 2a	Alternative 3
New double-circuit 230 kV transmission line				
Length on USFS Lands	15.9 miles	13 miles	15.5 miles	4.4 miles
Length on BLM Lands	3.7 miles	3.7 miles	3.7 miles	3.7 miles
Length on State Lands	2.4 miles	0 miles	0 miles	0 miles
Length on Private Lands	60.8 miles	44.0 miles	43.3 miles	67.4 miles
Total Length	**83.1 miles**	**60.7 miles**	**62.5 miles**	**75.5 miles**
Length of 3-Circuit Tower Mitigation Temporary Transmission Line	0 miles	7.5 miles	7.5 miles	0 miles
Identified Helicopter Construction	8.4 miles	0 miles	3.6 miles	0 miles
New 230 kV circuit between proposed Haskell Canyon Switching Station and Castaic Power Plant				
Length on USFS Lands	4 miles for all alternatives			
Length on BLM Lands	300 feet for all alternatives			
Length on State Lands	4.5 miles for all alternatives			
Length on Private Lands	8.5 miles for all alternatives			
Total Length	**12 miles for all alternatives**			
Reconductoring of the Barren Ridge-Rinaldi 230 kV transmission line				
Length on USFS Lands	13 miles for all alternatives			
Length on BLM Lands	4 miles for all alternatives			
Length on Private Lands	59.5 miles for all alternatives			
Total length	**76.1 miles for all alternatives**			
New Haskell Canyon Switching Station				
Total Area	Seven acres on LADWP-owned land [Station: 500 feet x 600 feet (6.9 acres); Gravel Parking Area: 100 feet x 100 feet (0.25 acres)]			
Expansion of Barren Ridge Switching Station				
Total Area	Three acres (235 feet x 500 feet)			

Note: Quantities are approximate.

FIGURE S-1. ACTION ALTERNATIVES


Action Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
BLM
A
California City
58
Mojave
C
B
14
Edwards Air Force Base
1
Los Angeles Aqueduct
Kern County
Los Angeles County
138
2
California Aqueduct
D
Elizabeth Lake
F
Lancaster
Los Angeles Ventura County
5
Angeles National Forest
Castaic Power Plant
2a
G
Green Valley
Palmdale
I
3
J
Agua Dulce
Proposed Haskell Canyon Switching Station
126
Santa Clarita
K
Rinaldi Substation
N
Miles 0 5 10 15 20

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the project area, 97 of which are within ANF. Current, on-going operation and maintenance activities for existing facilities in the Project area would continue. This Final EIS/EIR will address the resulting environmental effects from taking no action and compare it to the effects of permitting the Proposed Action or an Alternative to the Proposed Action.

S.3 ENVIRONMENTAL IMPACTS

Impacts that would result from constructing and operating the Proposed Action and Alternatives were assessed using a methodology that documents the existing environmental conditions, then classifies and quantifies the various types of impacts that could occur. The potential impacts are compared to impact thresholds and assigned significance based on the extent of change from existing conditions. Mitigation measures are proposed as necessary to alleviate significant adverse effects. The methodology employed is discussed below.

S.3.1 IMPACT ASSESSMENT METHODOLOGY

The impact assessment methodology for each resource in Chapter 4 was used to determine the significance of identified impacts, as required by CEQA. The impact locations and intensity were recorded and the impacted area described. To determine impact intensity (i.e., the severity of the potential impact), an "impact model" was developed for each resource classification using the same criteria, as applicable:

- Resource sensitivity—the probable impact(s) to a particular resource as a result of Project-related activities
- Resource quality—the pre-Project condition of the resource potentially affected
- Resource quantity—the amount of the resource potentially affected
- Duration of impact—the period of time over which the resource would be affected, measured as short-term (up to a few years) or long-term (life of the Project and beyond)
- Time of year—the season or period of time which the resource would be affected
- Setting—consideration of the Project location, the affected region, and interests
- Expressed public concern—the amount of concern expressed by the land management agencies and the public

Pursuant to NEPA, the intent of the environmental impact analysis is to provide a scientific and analytic basis for comparing the Alternatives. The analysis also identifies any adverse environmental effects that cannot be avoided should the Project be implemented, and presents mitigation measures to minimize adverse environmental impacts (40 CFR 1502.16).

Environmental effects include direct, indirect, and cumulative impacts. Cumulative impacts are discussed in Chapter 5 of this Final EIS/EIR.

S.3.2 IMPACTS

The implementation of the Proposed Action or Alternatives has the potential to result in three basic types of impacts to environmental resources. These impact types include the following:

Construction impacts associated with the short-term presence of Project construction activities, resulting in impacts such as ground disturbance, noise, and air emissions;

Increased access-related impacts associated with enhanced accessibility by persons, such as by using Project access roads into areas that are currently remote or inaccessible; and

Operational impacts associated with the long-term presence of Project facilities and improvements, such as inspections, maintenance checks, and repairs, and the long-term operation of facilities and improvements.

Construction and operation of the BRRTP would result in a number of permanent and temporary impacts. The temporary impacts would cease upon completion of the construction phase. Many of the impacts can be minimized by implementing General Practices (GPs) and specifically recommended mitigation measures.

S.3.3 MITIGATION MEASURES

Mitigation measures were examined to see if they could be effective in reducing the intensity of impacts. If analysis concludes the possibility of a potentially significant impact even after GPs are considered, then specific mitigation was applied to lessen the impact or potentially reduce it to a less than significant level. Both 40 CFR Section 1508.20 of the Council on Environmental Quality regulations for implementing NEPA and the CEQA Guidelines Section 15370 define "mitigation" as:

a. Avoiding the impact altogether by not taking a certain action or parts of an action;
b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
c. Rectifying the impact by repairing, rehabilitating, or restoring the affected ["impacted" under CEQA] environment;
d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
e. Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation is only required for significant impacts under CEQA; however, NEPA encourages mitigation for all of the adverse impacts of a project (40 CFR 1502.16(h)). For this reason, some mitigation measures described in this document are wholly appropriate under NEPA, although the impacts they address may not be considered significant under CEQA.

S.3.4 ENVIRONMENTAL CONSEQUENCES

CEQ NEPA Regulations require that an EIS include a discussion of the environmental impact of the Proposed Action, any adverse environmental effects that cannot be avoided should the proposal be implemented, and alternatives to the proposed action (42 USC 4332(C)(ii) and 40 CFR 1502.16). A discussion of the Proposed Action and alternatives is included in Chapter 1 (Purpose and Need) and Chapter 2 (Alternatives Including the Proposed Action) of this Final EIS/EIR. Together these chapters detail the Project objectives, the purpose and need for the Project, the Proposed Action, and the identification and selection of potential feasible alternatives, and fully address the Project's specific design. The environmental setting of the Proposed Action is detailed in Chapter 3 (Environmental Setting). The potential environmental effects of the Proposed Action or alternatives and mitigation measures to reduce or avoid these effects are described in detail in Chapter 4 (Environmental Impacts) and Chapter 5 (Cumulative Effects) of this Final EIS/EIR. Impacts identified as significant and unavoidable are those that cannot be reduced to less-than-significant levels through the application of feasible mitigation measures; these are considered adverse environmental effects that cannot be avoided. These adverse environmental effects that cannot be avoided are summarized in Table S-3 below.

TABLE S-3. ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Adverse Environmental Effects that Cannot Be Avoided for All Action Alternatives
Agriculture - Cumulatively significant impacts to agricultural operations as a result of Project construction and operation
Air Quality and Climate Change - Maximum daily construction emissions would exceed regional significance thresholds in 2013 and 2014
Air Quality and Climate Change - Emissions of NO_x would be above the *de minimis* threshold in 2013 and/or 2014
Air Quality and Climate Change – Cumulative impacts to PM_{10} emissions because emissions would contribute to regional significance thresholds being exceeded
Biological Resources – Cumulative impacts on all Alternatives to slender mariposa lily, desert tortoise, and California gnatcatcher. Cumulative impacts on Alternative 1 only to Swainson's hawk, peregrine falcon, California condor, golden eagle, and burrowing owl.
Cultural Resources – Effects to a National Register of Historic Places- and California Register-listed historic resource (Old Ridge Route and its contributing elements) and Olive Power Plant 1 Transmission Line (eligible for listing on the National Register; listed on California Register)
Recreation – Degradation of the Pacific Crest National Scenic Trail
Recreation – Contribute to the long-term loss or degradation of recreational opportunities by allowing for unmanaged recreational uses
Recreation – Construction impacts related to restricted access or disruption of activities within recreational areas
Transportation/Traffic – Construction activities would exceed Level of Service standard "D"
Visual Resources – Impact to the Pacific Crest National Scenic Trail outside and within Angeles National Forest
Visual Resources – Non-compatibility with Forest Service Scenic Integrity Objectives and reduced Scenic Integrity created as a result of the project
Visual Resources – Impacts on residences, travelers, and recreationists as a result of contrasts created by the project
Visual Resources – Cumulative impact as a result of an increase in the number of structures and structure prominence
Water Resources – Cumulative impact on watersheds

S.4 ALTERNATIVES COMPARISON

The following sections offer a comparison of the potential environmental impacts associated with the five Project Alternatives: the No Action Alternative and the four action Alternatives. As the Project common components (the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station) are shared by all action Alternatives, their associated impacts would be the same for each action Alternative; therefore, this comparison focuses on the impacts of the proposed 230 kV double-circuit transmission line for each action Alternative.

S.4.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. Current, ongoing operation and maintenance activities for existing facilities in the Project area would continue. Impacts of the No Action Alternative would include impacts from the continuation of ongoing activities, but new impacts associated with the implementation of the No Action Alternative are not anticipated. Relative to the action Alternatives, all impacts associated with the construction, operation, maintenance and decommissioning of BRRTP would be avoided.

S.4.2 ALTERNATIVES COMPARISON SUMMARY TABLE

Table S-4 below summarizes the impacts within a 500-foot corridor for the proposed new 230 kV double-circuit transmission line for each action Alternative by environmental resource. The No Action Alternative represents a no-build scenario and does not include the 230 kV transmission line. As such, it has not been included in this summary table. As the Project common components (the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station) are shared by all action Alternatives, their associated impacts would be the same for each action Alternative; therefore, they have not been included in the summary table.

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TABLE S-4. COMPARISON TABLE FOR ACTION ALTERNATIVES

Issues or Concerns		Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative			
		Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3
Jurisdiction Crossed (miles)	*United States Forest Service*	15.9	13.0	15.5	4.4
	Bureau of Land Management	3.7	3.7	3.7	3.7
	State Land	2.4	0.0	0.0	0.0
	Private	60.8	44.0	43.3	67.4
	TOTAL	83.1	60.7	62.5	75.5
Miles Within Access Road Ground Disturbance Categories (percentage of Alternative)	*1. Existing roads or agricultural land, no proposed road widening anticipated*	33.1 (39.8%)	52.4 (86.2%)	50.3 (80.4%)	47.3 (62.5%)
	2. Existing 8-foot wide roads that require an additional 8 feet of width	34.4 (41.3%)	8.3 (13.7%)	8.6 (13.7%)	27.8 (36.7%)
	3. Construct new road on flat terrain (0-10%)	6.4 (7.7%)	0	0	0
	4. Construct new road on sloping terrain (10-20%)	0	0	0	0
	5. Construct new road on steep terrain (20-30%	0.4 (0.5%)	0.1 (0.2%)	0.1 (0.2%)	0.5 (0.7%)
	6. Construct road on very steep terrain (greater than 30%)	0.5 (0.6%)	0	0	0.1 (0.1%)
	Identified Helicopter Mitigation areas	8.4 (10.1%)	0	3.6 (5.8%)	0
Ground Disturbance Estimates	*Miles of transmission line requiring new access roads*	7.3	0.1	0.1	0.6
	Temporary (acres)	576 – 599	398 – 399	405 – 409	512 - 520
	Permanent (acres)	120 – 199	57 – 70	59 – 75	91 – 135
Land Use	*Residences within 1000 Feet of Centerline*	106	156	70	242
	Acquisition of Residential Structures	0	0	0	7
	Number of Pacific Crest Trail Crossings	1	1	1	3
	USFS Back Country Non-Motorized Crossed	2.4 requires a Project-specific ANF LMP amendment	0.0	1.0 requires a Project-specific ANF LMP amendment	0
	Miles of Centerline within Eligible Wild and Scenic River Corridor	0.0	2.7	2.1	0.0
	Miles of State Park/Recreation Area Crossed	2.4 (Centerline) 2.9 (within 500-foot corridor) Castaic Lake State Recreation Area	0.0	0.0	0.0
	Miles of Mountains Recreation and Conservation Authority Parkland Crossed	0.0	0.0	0.0	1.0
	Miles of Centerline within Agency-Designated Utility Corridor	14.2 72.5% of federal land crossed	14.5 86.8% of federal land crossed	13.6 59.4% of federal land crossed	8.0 98.8% of federal land crossed
Cultural Resources	*Number of Eligible Sites (determined or assumed) within 50-foot Corridor, including Resources Listed or Eligible to be listed to the National Register of Historic Places (NRHP) or California Register of Historic Resources (CRHR)*	33 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the NRHP: Old Ridge Route, which includes the National Forest Inn, Halfway Inn, Reservoir Summit Service Center Resources listed to CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line	15 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line	15 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line.	26 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line
	Miles of Centerline with Previous Survey within 500-foot Corridor	31.1	11.5	13.6	18
	Miles (Percentage) Surveyed Without Known Resources	10.2 (33%)	7.1 (62%)	6.7 (49%)	15.4 (86%)
Wildfire and Fuels	*Miles of Modeled Very High Risk Conditions for Firefighter Safety and Obstruction to Suppression*	10	4.5	6.5	1.5
	Miles of Modeled Very High Risk Conditions for Potential for Wildfire	8	2.5	2.5	4

Issues or Concerns		Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative			
		Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3
	Miles of Modeled Very High Risk Conditions for Native Vegetation Alteration	13.5	1.5	2.5	9.5
Paleontological Resources	*Maximum Resource Sensitivity Levels (miles crossed)*	25.2 miles 9.5 miles Castaic Formation 0.3 miles Hungry Valley Formation 0.3 miles Mint Canyon Formation 2.3 miles Peace Valley Formation 0.3 miles Quail Lake Formation 12.2 miles Ridge Route Formation 0.3 miles Saugus Formation	2.4 miles 0.3 miles Anaverde Formation 0.1 miles Castaic Formation 0.3 miles Mint Canyon Formation 1.7 miles Saugus Formation	2.4 miles 0.3 miles Anaverde Formation 0.1 miles Castaic Formation 0.3 miles Mint Canyon Formation 1.7 miles Saugus Formation	6.1 miles 0.3 miles Anaverde Formation 1.5 miles Castaic Formation 4.1 miles Mint Canyon Formation 0.2 miles Saugus Formation
Traffic and Transportation	*Number of Public Roadway Crossings Causing Poor Levels Of Service (LOS) During Construction*	0	0	0	Bouquet Canyon Rd, north of Esquerra (LOS F) and Sierra Highway, north of Davenport Rd (LOS E)
	Miles of Potentially Significant Traffic Impacts	Construction Phase - 20.6 miles Maintenance Phase - 0 miles	Construction Phase - 15.9 miles Maintenance Phase - 0 miles	Construction Phase - 12.1 miles Maintenance Phase - 0 miles	Construction Phase - 17.2miles Maintenance Phase - 0 miles
	USFS Roads That May Require Temporary Improvement to Objective Maintenance Level.(ObML)	8N01 – Liebre Gulch (ObML 2) 8N04 – Old Ridge Route (ObML 3) 8N05 – Tumble Inn Rd (ObML 2) 6N43 – Forest Inn Rd (ObML 2) 5N17 – San Francisquito Motorway (ObML 2) 6N21 – City Highline Rd (or City Highline Motorway Rd) (ObML 2) 5N29 – Dry Canyon Rd (ObML 3) 6N32.3 – Templin Highway (ObML 2)	6N21-City Highline Rd (ObML 2) 5N27-Drinkwater Canyon Rd (ObML 2) 6N04--Leona Divide Fire Rd (ObML 2) 7N02--South Portal Rd (ObML 2) 7N0--Tule Divide Fire Rd (ObML 2)	6N21-City Highline Rd (ObML 2) 5N27-Drinkwater Canyon Rd (ObML 2) 6N04--Leona Divide Fire Rd (ObML 2) 7N02--South Portal Rd (ObML 2) 7N01--Tule Divide Fire Rd (ObML 2)	none
Visual Resources	*Residual Impact Level (miles)*	H – 20.4 M - 18.1 Pacific Crest National Scenic Trail, residences, and ANF Templin vista point	H – 4.5 M – 11.7 Residences, Pacific Crest National Scenic Trail, and ANF Green Valley Camp Site	H – 4.6 M – 12.5 Residences, Pacific Crest National Scenic Trail (generally parallel alignment within the foreground visibility zone for approximately two miles), the ANF Green Valley Camp Site, and transportation viewpoints	H – 9.0 M - 29.1 Residences, Pacific Crest National Scenic Trail, minor trails, Mountains Recreation and Conservation Authority, Ritter Ranch, Veluzat Motion Picture Ranch
	Non-Compliance with ANF SIOs	14.5	13.3	15.5	3.6
	Miles of ANF Land Use Zone Not Suitable for Major Utility Corridor	1.7	0.0	1.0	0.0
	Miles within the ANF visible from the Pacific Crest National Scenic Trail (PCT) within the Foreground	0.0	1.5	2.8	0.8
	Number of Residences within 500 Feet of Centerline	29	63	32	23
Air Quality[2]	*Conformance with South Coast Air Quality Management District (SCAQMD) and Antelope Valley Air Quality Management District (AVAQMD) (NO_x Exceeding Threshold)*	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold. SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds.	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD : Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds
	Federal Conformity Determination Requirement	Annual construction emissions for the portion of Alternative 1 on federal lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012. In 2013 and 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 2 on federal Lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 2a on federal Lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 3 on federal lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed de minimis threshold for NOx of 10 tons per year
Fish and Wildlife Resources	*Total Miles Crossed with Known Federal and State Endangered Species Act (ESA) Listed Species*	4.2	3.7	3.7	3.7
	Miles Crossed with Known Federal and State ESA Listed Species on BLM lands	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2** **Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
	Miles Crossed with Known Federal ESA Listed Species on NFS lands	0.3 0.1 NFS (California Condor) 0.2 NFS/CDFG (California Condor)	0.0	0.0	0.0
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private lands	2.2 0.1 Private (California Condor) 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known USFS Special Status Wildlife Species	0.0	0.1 0.1 USFS (Coastal Rosy Boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0
	Miles of Designated USFWS or CDFG Wildlife Habitats	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (Coastal California Gnatcatcher)
	Miles of Designated BLM Habitat	0.0	0.0	0.0	0.0
	Miles of Designated NFS Habitat	4.4 NFS GIS modeled Habitat for the Arroyo Toad, Southwestern Willow Flycatcher, and Least Bell's Vireo	4.9 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	4.6 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	1.0 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback
	Miles of Avian Risk	H – 6 M – 19 L – 58	H – 1 M – 7 L – 55	H – 1 M – 11 L – 53	H – 1 M – 11 L – 65
	Miles of Condor Risk	H – 6 M – 33 L – 46	H – 0 M – 10 L – 53	H – 3 M – 9 L – 53	H – 1 M – 25 L – 51
Vegetation	*Miles Crossed with Known Federal and State Threatened, Endangered, Candidate, and Proposed Plant (TECP) Species*	0.0	0.0	0.0	0.0
	Miles Crossed with Known Federal Special-status Plant Species on Private lands	0.0	0.0	0.0	0.0
	Miles Crossed with Known USFS Sensitive Plants	1.3 1.2 Short-joint Beavertail 0.1 Slender Mariposa Lily	3.2 1.2 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	3.1 1.1 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	1.2 1.1 Slender Mariposa Lily 0.1 Slender Mariposa Lily & Short-joint Beavertail
	Acreage of Riparian Vegetation Crossed	136 acres	126 acres	119 acres	154 acres
	Acreage of Joshua Tree Woodland Crossed	334 acres	320 acres	320 acres	320 acres
	Acreage of Riversidian Sage Scrub Crossed	448 acres	92 acres	92 acres	770 acres
	Number of Riparian Conservation Areas (RCA) Crossed	151	66	94	6
	Acres of RCA within 500-foot Corridor	99.5 acres	70.9 acres	87.6 acres	0.6 acres
	Miles with Noxious Weeds or Invasive Species Identified within 500 ft. Corridor during BRRTP Botanical Surveys	1.4	3.6	2.9	0. 1
Geohazards/ Geologic Resources	*Distinctive Geologic Features*	None	None	None	0.4 miles of white tuff marker beds
	Miles Crossed of High Levels of Earthquake Ground Shaking	13.4 Traverses the San Andreas fault zone diagonally and has a longer distance of departure from the high impact areas	9.8 Crosses perpendicular to the San Andreas fault zone and departs from the high ground shaking areas in a shorter distance	11.8 Crosses perpendicular to the San Andreas fault zone	16.9 Traverses the San Andreas fault zone diagonally and has a longer distance of departure from the high impact areas
	Miles Crossed of Liquefaction Hazard Zones (ratio to available data)	1.2 (13.6%)	2 (11.7%)	1.8 (10.2%)	10.4 (24.9%)
	Miles Crossed of Potential Landslides (ratio to available data)	6.6 (25.4%)	0.2 (0.7%)	0.2 (0.7%)	4.1 (11.5%)
	Miles Crossed of Earthquake Induced Landslide Hazard Zone (ratio to available data)	8.5 (63.6%)	2.0 (16.0%)	1.9 (12.4%)	18.8 (45.1%)
	Miles Crossed of High Soil Erosion Potential (% of total length)	26.0 (31.3%)	20.4 (25.1%)	17.2 (27.6%)	20.2 (26.9%)

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**															
		Alternative 1				**Alternative 2 Proposed Action**				**Alternative 2a[1]**				**Alternative 3**			
Water Resources	*Miles Slope % Crossed* 0-10 10-20 20-30 >30	54.1	4.5	12.3	12.3	44.4	3.2	7.4	5.8	44.3	2.8	7.4	8.3	50.0	5.9	13.8	6
	Number of Stream Crossings (perennial & intermittent) by Centerline	146				78				79				92			
	Number of Streams within 500-foot Corridor (perennial & intermittent)	168				95				97				113			
	Number of National Wetlands Inventory (NWI) wetlands crossed by Centerline or 500-foot Corridor	1 (California Aqueduct)				2 (Vegetated Wetland and California Aqueduct)				1 (Vegetated Wetland) 1 (California Aqueduct)				1 (California Aqueduct)			
	Miles of Significant Ecological Areas (SEA) crossed	8.1				2.6				2.4				4.7			

NOTES:
NA = Not applicable
M=Moderate impact
H=High impact
L=Low impact

[1] Environmental Resources are summarized from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station.

[2] All other annual emission standards are met.

S.5 NEPA FEDERAL AGENCY PREFERRED ALTERNATIVE

Pursuant to NEPA Regulations (40 CFR 1505.2(b)), the environmentally preferable alternative or alternatives must be identified in the Record of Decision (ROD) for the Project. In this Final EIS/EIR, the BLM and USFS have identified the No Action Alternative and Alternative 2 as environmentally preferable. The No Action Alternative avoids the impacts associated with the action Alternatives and would be the environmentally preferable alternative among all the Alternatives. No Action does not meet the purpose and need of the Project, including the transmission and storage of renewable energy. Alternative 2, the Proposed Action, has the least overall impacts of the action Alternatives, and is the Environmentally Preferable Action Alternative.

NEPA Regulations require the lead agency to identify the agency's preferred alternative, if one or more exists, in the Draft EIS and identify such alternative in the final statement unless another law prohibits the expression of such a preference (40 CFR 1502.14). The BLM and USFS have selected Alternative 2, the Proposed Action, as the Agency Preferred Alternative.

S.6 CEQA ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Consistent with CEQA Guidelines Section 15126.6(e)(2), Alternative 2, the Proposed Action, has been identified by the CEQA Lead Agency, LADWP, as the Environmentally Superior Alternative. For a full comparison of the Alternatives, please refer to Table S-4, Comparison Table for Action Alternatives, above, and Section 2.6, Alternatives Comparison Summary, in Chapter 2 of this Final EIS/EIR.

Alternative 2 has several unique advantages, including containing all Project components within a single utility corridor within the ANF and the immediate surrounding communities, which would limit the impact footprint of the Project. The Alternative 2 230 kV double-circuit transmission line would be located on federal land entirely within a federally designated utility corridor identified by the 2009 West-Wide Energy Corridor Final Programmatic EIS (PEIS). Alternative 2 would also consolidate all Project components with existing LADWP facilities, minimizing ongoing operation and maintenance impacts. Additionally, Alternative 2 would utilize approximately two miles of existing four-circuit structures in the southern portion of the ANF for the proposed transmission line, reducing the need for new towers. The consolidation of facilities would allow LADWP to utilize the existing network of access roads, resulting in the least ground disturbing impacts among the action Alternatives. The Alternative 2 230 kV double-circuit transmission line would traverse the unincorporated community of Green Valley. To minimize impacts to this community, Three-Circuit Tower Mitigation would be implemented, combining the existing BR-RIN line onto a single tower with the proposed transmission line.

Alternative 1 would include the longest transmission line and greatest temporary and permanent ground disturbing impacts among the action Alternatives. It would also create impacts to the only cultural resource in the Project study area currently listed on the National Register of Historic Places, the Old Ridge Route and its contributing components. Additionally, it would create unique impacts to the Castaic Lake State Recreation Area.

Alternative 2a, similar to the Proposed Action (Alternative 2), would locate a majority of the transmission line on federal land within the federal corridor identified in the West-Wide Corridor PEIS, but would avoid the unincorporated community of Green Valley by exiting the corridor and creating a new pathway through the ANF for four miles before re-joining the federal corridor. The Alternative 2a transmission line would not parallel an existing transmission line or the proposed reconductoring activities for those four miles, resulting in construction, operation and maintenance impacts in additional areas of the ANF. Importantly, Alternative 2a would result in significant and unavoidable impacts to firefighting abilities within the ANF, by creating an indefensible Transmission Line Bounded Island of forest land between the existing BR-RIN and proposed transmission lines, where firefighting activities would be severely limited. Such an indefensible island would permanently put the unincorporated community of Green Valley, as well as the unincorporated communities of Lake Hughes and Elizabeth Lake, at higher risk from wildfires.

Alternative 3 would minimize the Project footprint on the ANF, but would impact the rural residential communities through which the proposed transmission line would traverse. It is the only Alternative that would require the acquisition of private residences. Seven residences would need to be acquired for the construction of the proposed 230 kV double-circuit transmission line associated with Alternative 3. It is also the only Alternative that would impact Mountains Recreation Conservation Authority land.

CHAPTER 1: PURPOSE AND NEED

1.1 INTRODUCTION

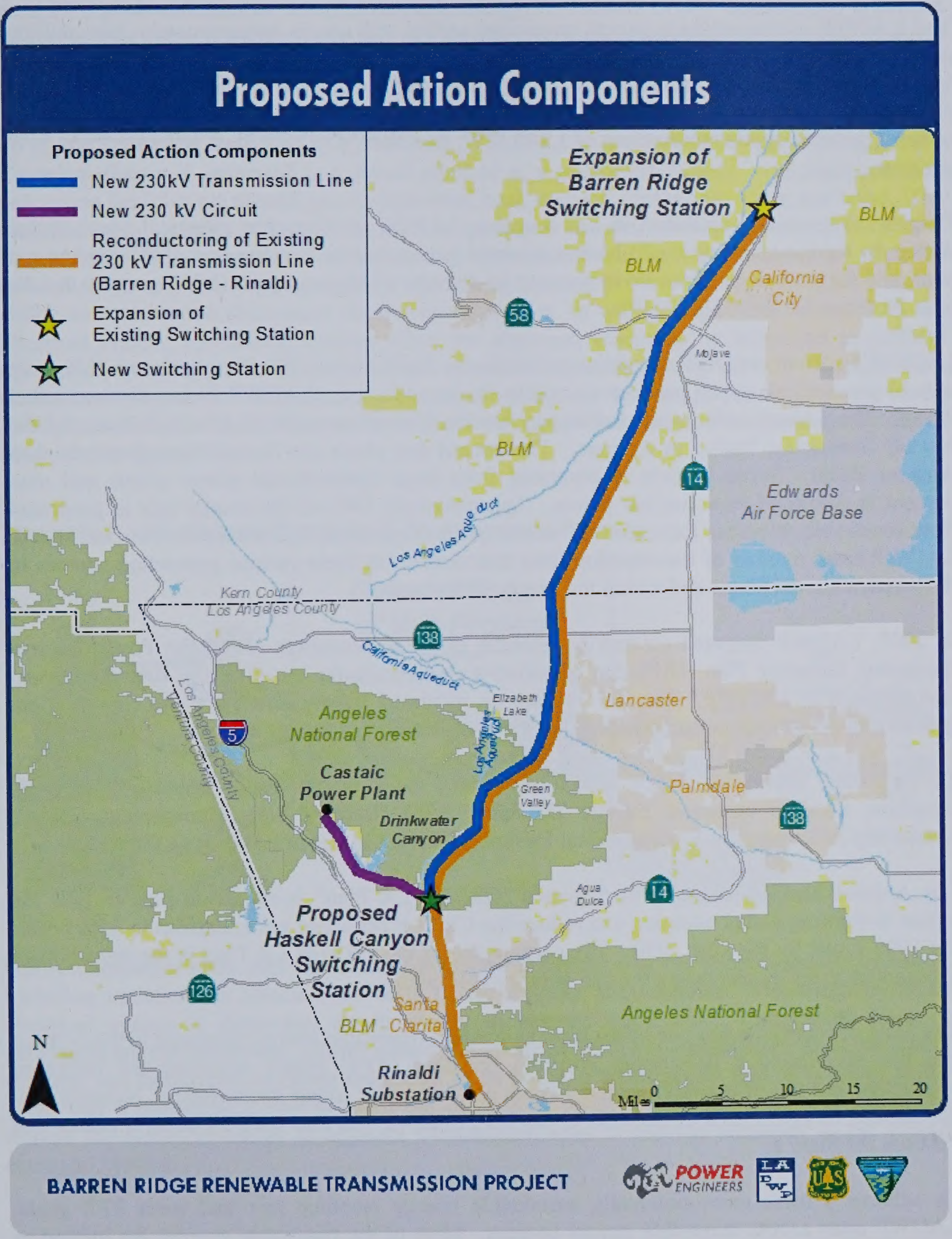
In accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the U.S. Department of Agriculture, Forest Service (USFS), the U.S. Department of the Interior, Bureau of Land Management (BLM), and the City of Los Angeles Department of Water and Power (LADWP) have prepared this joint Final Environmental Impact Statement / Environmental Impact Report (Final EIS/EIR) for the proposed Barren Ridge Renewable Transmission Project (BRRTP or Project). This action is in response to LADWP's application (1) to the USFS for a Special Use Authorization and (2) to BLM for a right-of-way grant. The grant of these applications by the agencies is a federal action requiring compliance with NEPA. As a governmental agency within California, LADWP is required to comply with CEQA for its direct undertaking of governmental actions (CEQA Guidelines, Section 15002(b)).

The BRRTP, as proposed by LADWP (Proposed Action), would be located in Kern and Los Angeles counties. It would extend 76 miles in length from the Barren Ridge Switching Station to Rinaldi Substation and extend 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station. As shown in Figure 1-1, the Proposed Action would include the following components:

(1) Expansion of the existing Barren Ridge Switching Station 12 miles north of the unincorporated community of Mojave, California. The existing switching station is 250 feet by 500 feet. The 250-foot side would be expanded by 235 feet, for a total station size of 485 feet by 500 feet (5.7 acres).
(2) Construction of a new 500-foot by 600-foot switching station in Haskell Canyon.
(3) Construction of 61 miles of a new double-circuit 230 kilovolt (kV) transmission line from the Barren Ridge Switching Station to a new switching station within Haskell Canyon. National Forest System (NFS) lands, BLM-managed public lands, and private property would be traversed.
(4) Reconductoring of 76 miles of the existing Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation. NFS lands, BLM-managed public lands, and private property would be traversed.
(5) Addition of 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant. NFS lands and BLM-managed lands would be traversed.

It has been determined that this Project is a major federal action significantly affecting the quality of the human environment, and the appropriate environmental analysis document is an EIS/EIR. This is an informational disclosure document used to: 1) inform agency decision makers and the public of environmental impacts that are expected to result from construction, operation, maintenance, and decommissioning of the proposed BRRTP; 2) present recommended mitigation measures that, if adopted, would avoid or minimize many of the significant environmental impacts identified; and 3) identify alternatives to the Proposed Action that could avoid or minimize significant environmental impacts associated with the Project as proposed, and evaluate the environmental impacts associated with these alternatives. This Final EIS/EIR has been prepared by the USFS and BLM as Co-Lead Agencies under NEPA, and LADWP as the Lead Agency under CEQA.

FIGURE 1-1. PROPOSED ACTION COMPONENTS MAP


Proposed Action Components
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconducting of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
BLM
BLM
BLM
California City
58
Mojave
14
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
138
California Aqueduct
Elizabeth Lake
Los Angeles Aqueduct
Lancaster
Angeles National Forest
Los Angeles County
Ventura County
5
Castaic Power Plant
Drinkwater Canyon
Green Valley
Palmdale
138
Agua Dulce
14
Proposed Haskell Canyon Switching Station
126
Santa Clarita
BLM
Angeles National Forest
Rinaldi Substation
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LADWP

1.1.1 BACKGROUND

The LADWP is the nation's largest municipal utility and serves approximately four million people. Its service territory covers the City of Los Angeles and certain parts of the Owens Valley, with annual sales exceeding 24 million megawatt-hours (MWh). LADWP has an annual electrical demand of 6,200 megawatts (MW). To maintain a reliable electrical system, it must obtain a system reserve requirement of 1,200 MW; therefore, LADWP must generate 7,400 MW per year.

Despite the growing population in Los Angeles, LADWP predicts that electrical consumption within its service territory would have a minimal increase at an average rate of 0.9 percent per year, and the peak demand would increase at an average of 60 megawatts (MW) per year for the next 20 years (LADWP IRP 2010).

LADWP's current resource mix relies primarily on fossil fuels (39% from coal and 31% from natural gas-fired plants) to produce electricity for its customers (LADWP Power Content Label 2009). The primary sources of coal-energy are the Utah Intermountain Power Project and the Navajo Generating Station in Arizona. The natural gas plants are located throughout the Los Angeles Basin. Seven percent is generated from large hydroelectric power plants and nine percent is generated from nuclear plants. Approximately 14% of the energy mix is generated from renewable resources (biomass and waste, geothermal, small hydroelectric, solar and wind). LADWP has a number of transmission lines that connect to these various generation sources in the western United States and within the Los Angeles basin.

In 2007, LADWP prepared an energy resource planning document called the Power System Integrated Resource Plan (IRP) that provided a framework for ensuring the future electrical energy needs of LADWP. The IRP focuses on increased energy efficiency and conservation, greenhouse gas reduction, and power generated from renewable energy sources.

To encourage energy efficiency and conservation, the City has implemented a number of programs such as customer Energy Efficiency (EE), Demand-Side Management (DSM), Leadership in Energy and Environmental Design (LEED), and Green Power for a Green LA.

Los Angeles Mayor Antonio Villaraigosa's "GREEN LA Plan" is an action plan to lead the nation in fighting global warming and reduce the City's greenhouse gas emissions to 35% below the 1990 levels by the year 2030. The cornerstone of the GREEN LA Plan is the reduction of greenhouse gases by increasing the use of renewable energy.

The State of California has one of the most aggressive renewable energy programs in the country and has established a Renewable Portfolio Standard (RPS) policy requiring the increased production and use of renewable energy (such as wind, solar, small hydroelectric, biomass, and geothermal energy). As a component to the IRP, LADWP has also adopted an RPS policy that matches the State's.

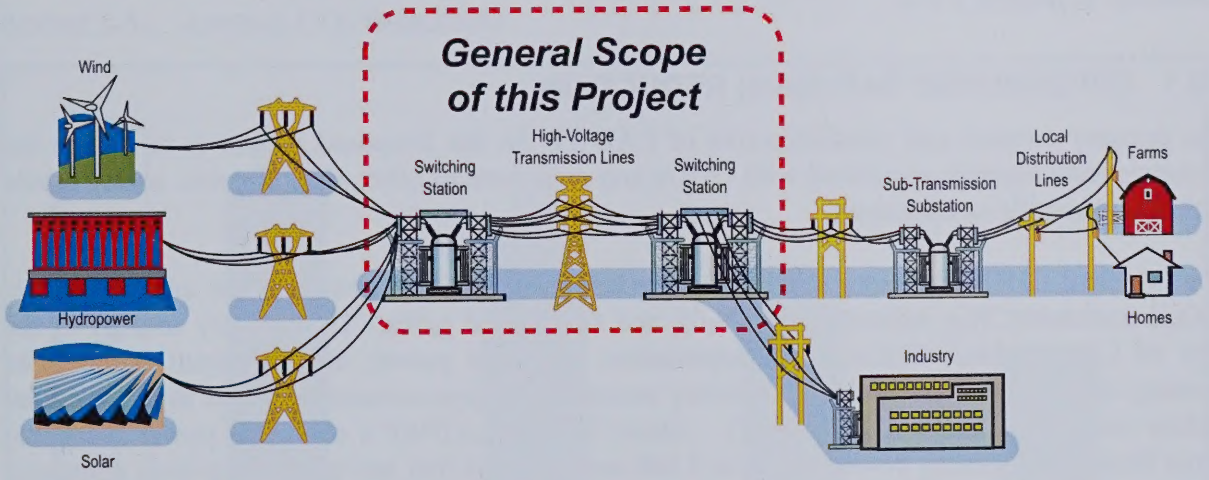
To achieve a more environmentally sustainable energy resource mix and meet RPS goals, LADWP must access renewable energy sources. Most of the renewable sources are located in more remote areas such as the Owens Valley, Mojave Desert, Tehachapi Mountains, and

Imperial Valley areas of Southern California where limited electrical infrastructure exists. To meet RPS goals and increase use of renewable energy, investment in new transmission is needed to access renewable resource areas and deliver the renewable energy to the electrical demand areas. This process is described and illustrated in the following section.

1.1.2 ELECTRICAL TRANSMISSION

Electrical energy is generated in a power plant or at a generation facility. The most common generation facilities are natural gas, hydropower, coal, nuclear, geothermal, solar, and wind. The electrical energy cannot be stored, but must be generated and delivered the moment it is needed. Transmission lines carry the electrical energy from generating facilities to areas of electrical demand, such as homes and businesses. Switching stations provide utility companies with the ability to connect and disconnect the transmission lines, or other components, to and from the electrical system. Switching stations allow for electrical energy to be redirected to perform maintenance and upgrades to an electrical system without disrupting service. Transmission substations "step-down" or reduce the electrical voltage so that the power can be transmitted through smaller distribution lines to the customer. A simplified electrical transmission system is illustrated in Figure 1-2.

FIGURE 1-2. SIMPLIFIED ELECTRICAL TRANSMISSION SYSTEM



Utility companies must maintain a reliable electrical system that can meet customer demands, including variations in seasonal and daily power supplies and demands. The reliability of an electrical system is dependent on its ability to operate when some transmission lines or generators are out of service. Utility companies create networks of transmission lines, switching stations, and substations to create redundant paths within a transmission grid or system. In the event that a transmission line is taken out of service, utility companies require the ability to reroute the electrical energy to adjacent transmission lines to provide reliability to the overall electrical system.

1.2 PROJECT PURPOSE AND NEED/OBJECTIVES

An EIS must explain the "underlying purpose and need to which the Lead Agency is responding in proposing the alternatives, including the proposed action" (40 CFR 1502.13). An EIR is required to include a statement of objectives to be achieved by the Proposed Action (CEQA Guidelines, Section 15124(b)). The objectives help the implementing agency develop a reasonable range of alternatives and assist decision-makers in preparing findings or a statement of overriding considerations, if necessary. To meet the Project needs, LADWP has the following purpose and need, in accordance with NEPA, or objectives, in accordance with CEQA:

- Reduce the environmental impacts associated with greenhouse gas emissions and create a more sustainable environment.
- Assist LADWP in meeting RPS goals.
- Meet LADWP's future electrical energy demands.
- Allow interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert areas.
- Increase LADWP's system reliability and flexibility in the utilization of renewable energy sources.
- Enable the delivery of renewable energy.

BLM's purpose and need is addressed in Section 1.3.1, and USFS' purpose and need is addressed in Section 1.3.2.

1.2.1 GREENHOUSE GAS (GHG) REDUCTION

The primary purpose and need/objective of LADWP for the Proposed Action is to reduce the environmental impacts associated with GHGs and emissions of other air pollutants, and to create a more sustainable environment.

The principal GHGs that enter the atmosphere because of human activities are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), and fluorinated gases. The primary sources of the City of Los Angeles' GHGs are transportation, electrical power, and industrial fuels. The burning of fossil fuels to produce electricity accounts for approximately 32% of the City's total carbon emission (LADWP IRP, 2007). About half of LADWP's electrical power resources come from coal-burning power plants in Utah and Arizona that are under long-term contracts. LADWP receives another quarter of its electrical power resources from natural gas power plants in the Los Angeles Basin. Renewable energy sources such as solar and wind do not produce GHGs.

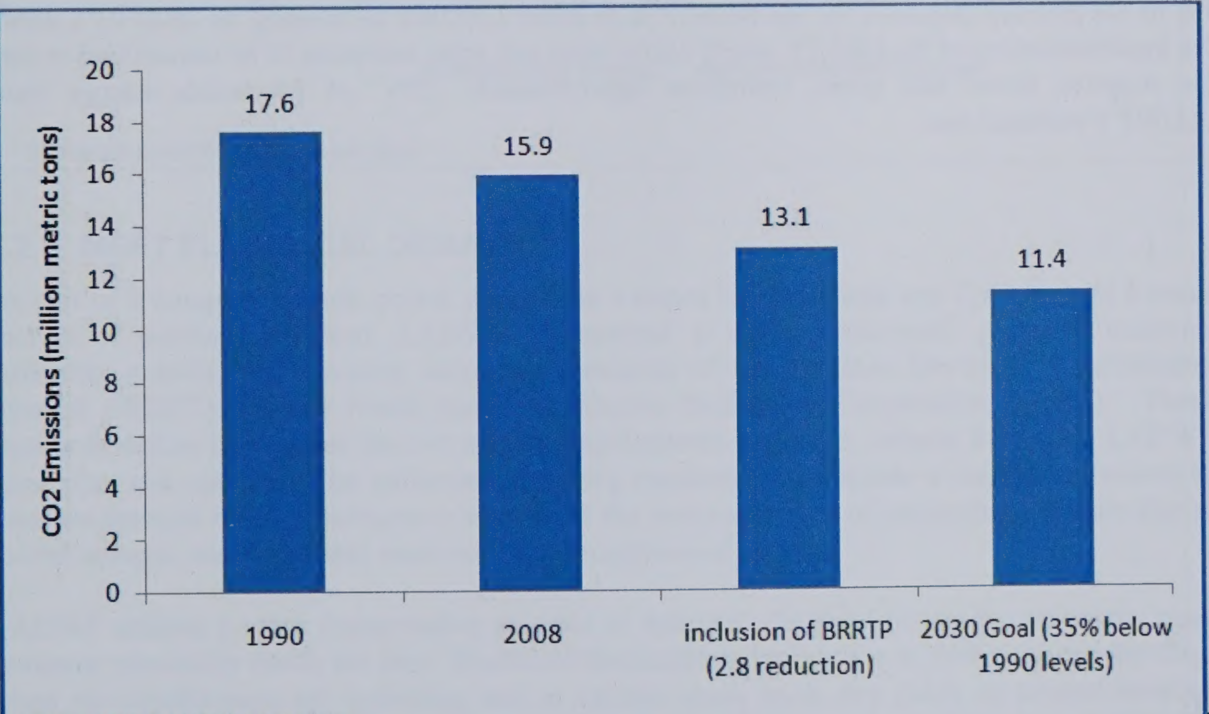
In 2006, California Senate Bill (SB) 1368 required utility companies to establish a GHG emission performance standard and implement regulations for all long-term commitments in electrical energy generation. California Assembly Bill 32, the Global Warming Solutions Act of 2006, required the California Air Resources Board (CARB) to develop regulations to reduce California's GHG emissions to 1990 levels by 2020.

The U.S. Environmental Protection Agency (EPA) has also recently taken steps toward regulating GHG emissions under the authority of the current Clean Air Act. In April 2009, the EPA issued a finding that GHG emissions pose a threat to public health and welfare (EPA 2009), and in January 2011, EPA began regulating GHGs from mobile and stationary sources of air pollution under the Clean Air Act (EPA 2010).

In 1990, LADWP produced (from owned and purchased generation) 17.8 million metric tons of CO_2 emissions. Beginning in 1991, a number of programs to reduce CO_2 emissions were implemented by the utility. These included replacement of older power plants with more efficient generators, conservation and energy efficiency programs, and increased use of renewable energy resources. These efforts have led to a 2.2 million metric ton reduction of CO_2 emissions in 2008 from 1990 levels (a 12% reduction).

The GREEN LA Plan would allow 11.4 million metric tons of CO_2 emissions per year. To obtain this GHG goal by 2030, LADWP must reduce 2008 CO_2 emissions levels by 4.5 million metric tons per year (refer to Figure 1-3). The Proposed Action would be a component of increasing LADWP's utilization of renewable resources to meet this goal. By allowing the delivery of potential renewable energy sources such as solar and wind from the high quality renewable energy areas of the Mojave Desert and Tehachapi Mountains, LADWP estimates the Proposed Action could reduce the City's GHG emissions by approximately 2.8 million metric tons of CO2 emissions per year, based on estimates of the additional renewable generation that would be made accessible to LADWP by BRRTP and the assumed associated displacement of existing LADWP fossil fuel energy sources (N. Parker personal communication 2009).

FIGURE 1-3. ANNUAL CO_2 EMISSIONS



Source: 2008 LADWP CO_2 Emissions

1.2.2 RPS GOALS

In 2002, California SB 1078 established a 20% RPS for California investor-owned utilities. In April 2007, the City of Los Angeles' City Council approved LADWP's RPS Policy to increase its goals to 20% by December 2010 and to 35% renewable energy by 2020 (exceeding the state of California's 33% renewable goal by 2020).

Electricity produced from the following technologies are considered "eligible" renewable resources for meeting RPS goals: biomass; biodiesel; digester gas; fuel cells using renewable fuels; geothermal; landfill gas; municipal solid waste (only if the energy conversion process does not employ direct combustion of solid fuel); ocean wave; ocean thermal and tidal current technologies; polar photovoltaic; small hydroelectric (30 MW or less); and solar thermal, wind, and other renewables that may be defined later.

As reported in LADWP's 2009 Power Content Label, the resource mix for that year consisted of 39% coal, 31% natural gas, 9% nuclear, 7% large hydroelectric, and 14% renewables (refer to Figure 1-4). The 14% renewable energy was generated from a mixture of LADWP's hydroelectric generation plants along the Los Angeles Water Aqueduct System, digester and landfill gas from sewage treatment plants and landfills which are converted into energy, and purchase from wind farms, small hydroelectric facilities, and other renewable resources. LADWP still needs an additional 6% of renewable energy to meet its 2010 goals and an additional 15% on top of that to meet its 2020 RPS goal of 35%.

One of the primary purposes for the BRRTP is to assist LADWP in meeting its 2020 RPS goal. The implementation of the BRRTP would allow wind and solar resources to be transmitted to the Los Angeles Basin and could contribute approximately 22%[1] of renewable energy into LADWP's resource mix.

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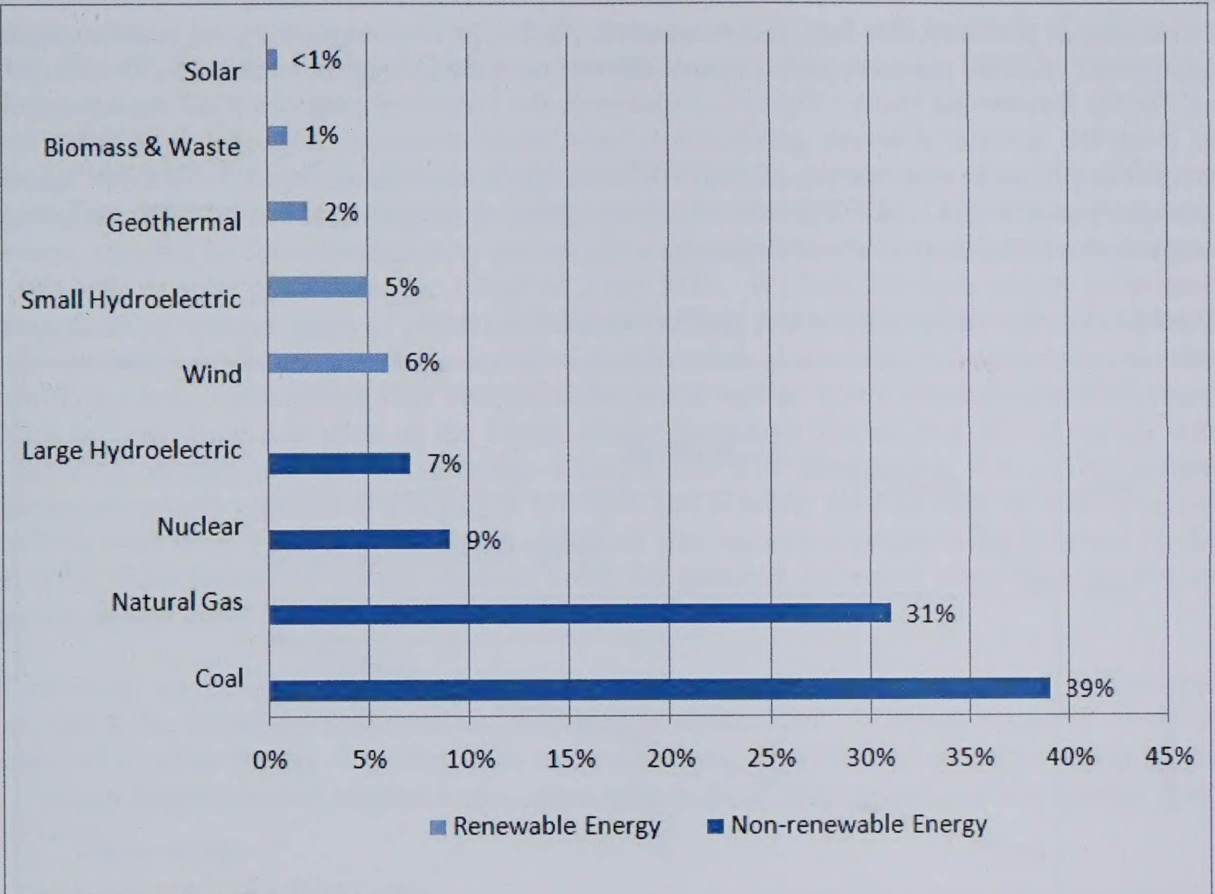
[1] LADWP generates approximately 7,400 MW of power annually. BRRTP would provide approximately 1,600 MW of transmission capacity.

FIGURE 1-4. LADWP ELECTRICAL RESOURCE MIX, 2009



Source: 2009 LADWP Power Content Label

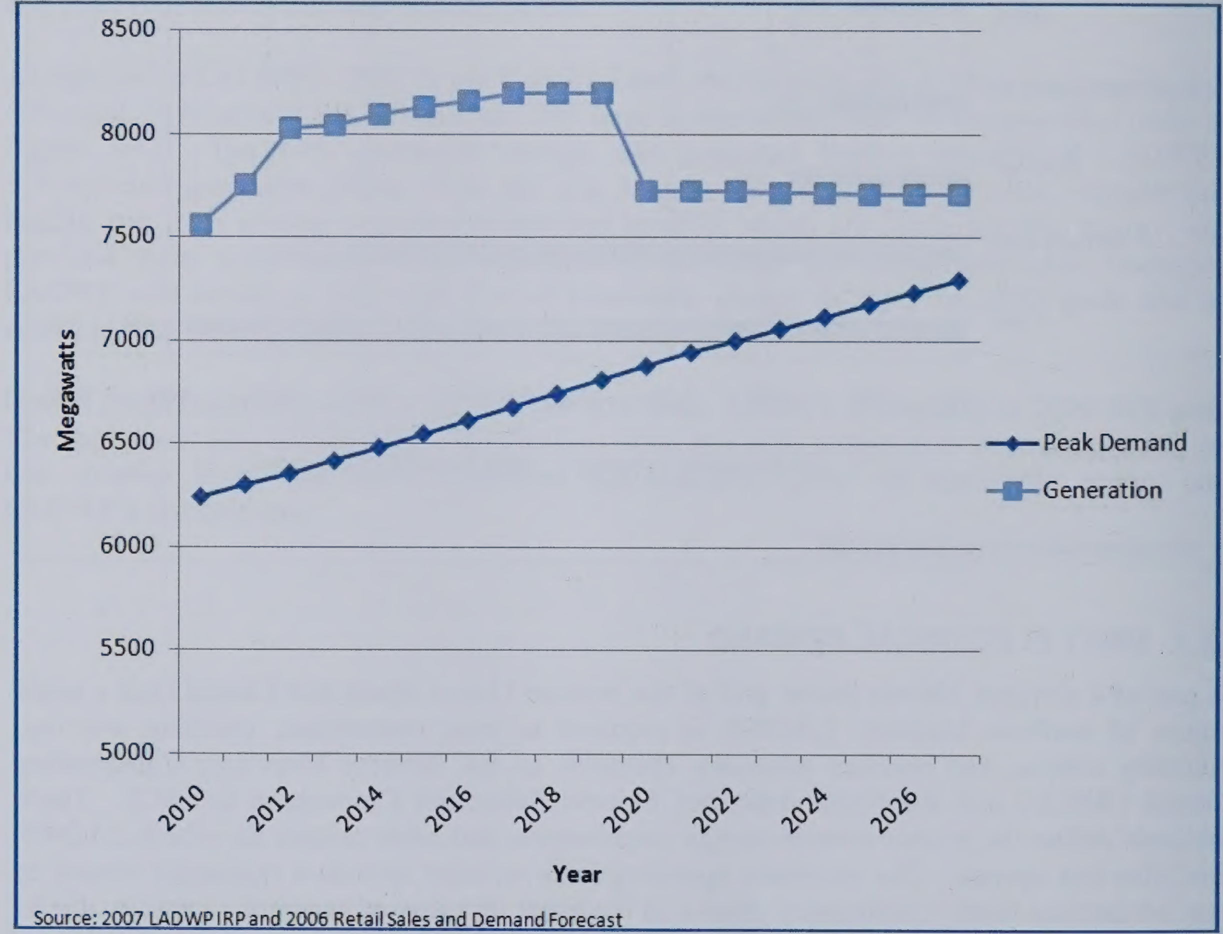
1.2.3 MEET ELECTRICAL DEMAND

As part of a complex electric power grid of the western United States and Canada (and a small section of northern Mexico), LADWP is required to meet operational, planning reserves, reliability criteria, and resource adequacy standards of the Western Electricity Coordinating Council (WECC) and the North American Electric Reliability Corporation (NERC). These standards define the system reserve margin requirements and other criteria for which LADWP must plan and operate. The minimum operating reserves must include a regulating reserve to meet on-demand needs, contingency reserve in the event of a loss of generating capacity due to forced outages, and additional reserves for interruptions of service.

LADWP utilizes a more conservative scenario to estimate electrical demands and ensure peak customer electricity needs are met. Electrical demands are highest (or at their peak) on hot days when air conditioners are operating and at certain times each day (such as around evening meals). On a typical summer day, LADWP's daily peak electrical demand is about 6,200 MW (IRP 2010). To maintain a reliable electrical system, LADWP must obtain a system reserve requirement of 1,200 MW. Therefore, the generating capacity required to meet the City's peak electrical demand is 7,400 MW.

In October 2006, a Load Forecast Study was performed to project electrical energy sales, production, and peak demands in the City of Los Angeles and Owens Valley (LADWP service territories). It predicted that LADWP customers' electricity consumption would increase at an average rate of 0.9% per year, and the peak demand would increase an average of 60 MW per year for the foreseeable future. Figure 1-5 illustrates the forecasted peak electrical demands and the projected amount of power generation to meet those demands. Figure 1-5 includes the contribution from the construction of the BRRTP in 2012. In addition, in 2019, LADWP's coal contracts terminate and LADWP must seek other sources of generation to ensure it has sufficient energy to meet long-term electrical demand.

FIGURE 1-5. ELECTRICAL DEMAND VS. POWER GENERATION



Source: 2007 LADWP IRP and 2006 Retail Sales and Demand Forecast

1.2.4 INTERCONNECT AND EXPAND LADWP'S RENEWABLE ENERGY

The Renewable Energy Transmission Initiative (RETI) has identified the Tehachapi/Owens Valley area as one of several high quality renewable energy areas in Southern California. While other Southern California areas, such as the Imperial Valley, have potential renewable energy resources that could be accessed by future projects, LADWP's purpose and need/objective for the BRRTP is to access the Tehachapi Mountains and Mojave Desert wind and solar resource areas (refer to Figure 1-6, Renewable Resources Map). The Mojave Desert has some of the highest solar insolation[2] in the world, as well as highly economical solar resources. Furthermore, the Tehachapi Mountains have excellent wind resources. The BR-RIN transmission line is the only existing LADWP transmission line that currently accesses the Tehachapi Mountains and Mojave Desert renewable resource area, although it is near its capacity to transfer any more energy.

In the mountains northeast of Tehachapi, LADWP developed the Pine Tree Wind Project (generates 135 MW), which began operating in 2010. Furthermore, LADWP currently has several requests for interconnection by private generation developers for 1,500 MW of wind and 1,100 MW of solar generation, for a total of 2,600 MW. While all of these private generation projects are in various stages of planning and/or permitting and may not all be constructed, there is the potential for future projects to be developed because of the solar and wind resources that exist in the area. The existing Pine Tree Wind Project as well as future renewable projects would share an interconnection point at the Barren Ridge Switching Station and deliver energy into LADWP's system through the existing BR-RIN 230 kV transmission line. The current maximum transfer capacity of BR-RIN is 570 MW and is nearly used up with the completion of the Pine Tree Wind Project. Without the additional transmission capacity being proposed by the BRRTP, these renewable energy sources would be stranded in remote areas with no way of getting energy to the load centers in the Los Angeles Basin.

Conversely, no change to the Proposed Action would be anticipated if planned or expected wind projects in the Tehachapi area were not permitted or constructed. Adequate resources would be expected to allow for the interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert areas even without the permitting of any specific wind projects.

LADWP's process for approving generator interconnection to BRRTP would follow the FERC's approved Large Generator Interconnection Procedures (LGIP). Per FERC requirements, LADWP is required to treat all Interconnection Customers (IC) equally. While all current ICs of the BRRTP are either wind or solar projects, LADWP does not have the ability to preferentially treat renewable energy ICs over other non-renewable generators should they request interconnection. LADWP processes interconnection requests in the order received until all applications have been processed or facility capacity has been reached. If one project withdraws, the next queued request would be processed.

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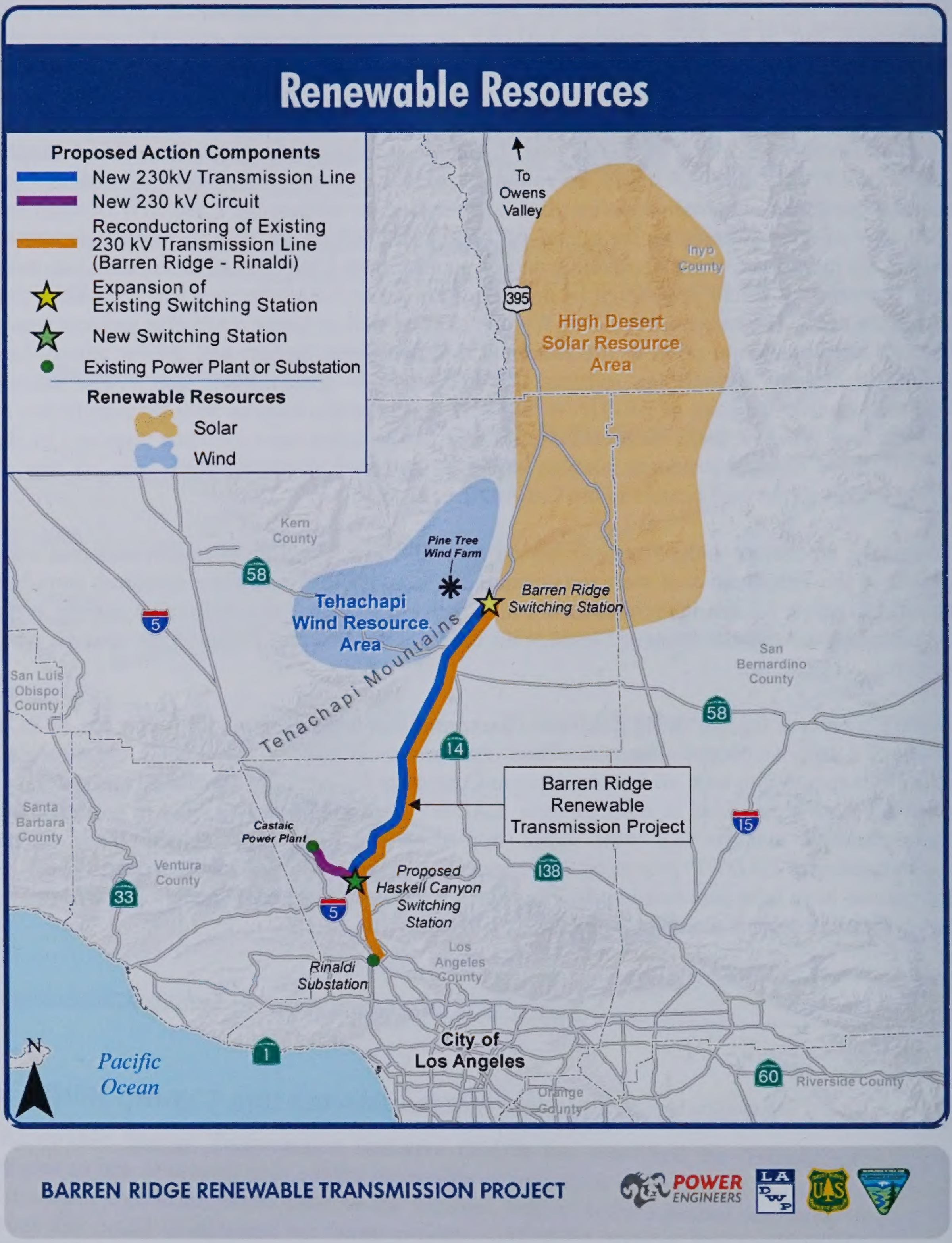
[2] Solar Insolation is the amount of solar radiation on the surface of the earth. The insolation levels of a particular region help determine the solar collector size that is required.

FIGURE 1-6. RENEWABLE RESOURCES MAP


Renewable Resources
Proposed Action Components
New 230kV Transmission Line
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Existing Power Plant or Substation
Renewable Resources
Solar
Wind
To Owens Valley
395
Inyo County
High Desert Solar Resource Area
Kern County
Pine Tree Wind Farm
58
Tehachapi Wind Resource Area
Barren Ridge Switching Station
5
Tehachapi Mountains
San Luis Obispo County
San Bernardino County
58
14
Barren Ridge Renewable Transmission Project
Santa Barbara County
Castaic Power Plant
Ventura County
15
33
Proposed Haskell Canyon Switching Station
138
5
Los Angeles County
Rinaldi Substation
N
Pacific Ocean
1
City of Los Angeles
60
Orange County
Riverside County
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

1.2.5 PROVIDE INCREASED RELIABILITY AND FLEXIBILITY OF RENEWABLE RESOURCES

Wind and solar are intermittent renewable energy sources that do not provide a consistent energy source and cannot be depended upon to meet peak demand conditions; therefore, they are not controllable or dispatchable by power system operations as a consistent, reliable source. Wind resources only produce energy when the wind is blowing (a majority of the energy is produced at night, when energy demands are low). Solar generating resources only produce energy during the day when the sun is shining (when energy demands are high). The typical peak consumer demand periods are around evening meals and during summer months when air conditioners are operating.

Together, wind and solar energy tend to provide a consistent source of energy for the power system; however, average monthly wind energy production profiles are not representative of actual hourly production. Matching the renewable energy production with consumer demand for power is an enormous challenge for utilities and would require LADWP to increase operating flexibility to provide an increased utilization of both wind and solar energy within their electrical system. This requirement can be satisfied only through the combined and integrated use of other generation sources. With BRRTP's addition of an electrical circuit between the Castaic Power Plant and the proposed Haskell Canyon Switching Station, Castaic could be utilized to "balance" the intermittent energy sources into LADWP's electrical system.

As a pumped-storage hydroelectric power plant, Castaic could be used for load balancing when the transfer of renewable energy would potentially exceed electrical demand. When generation levels are high and demand is low, LADWP can use electricity to pump water from the lower elevation Castaic Reservoir to the higher elevation Pyramid Lake, effectively storing potential energy in the water. Later, when energy demand increases, this water can be transferred back to Castaic Reservoir through the power plant turbines to generate electricity for immediate use.

1.2.6 DELIVERY OF RENEWABLE RESOURCES

Another purpose and need/objective of the BRRTP is to maximize the delivery of renewable wind and solar energy from the Tehachapi Mountains and Mojave Desert areas to LADWP's customers residing in the Los Angeles Basin.

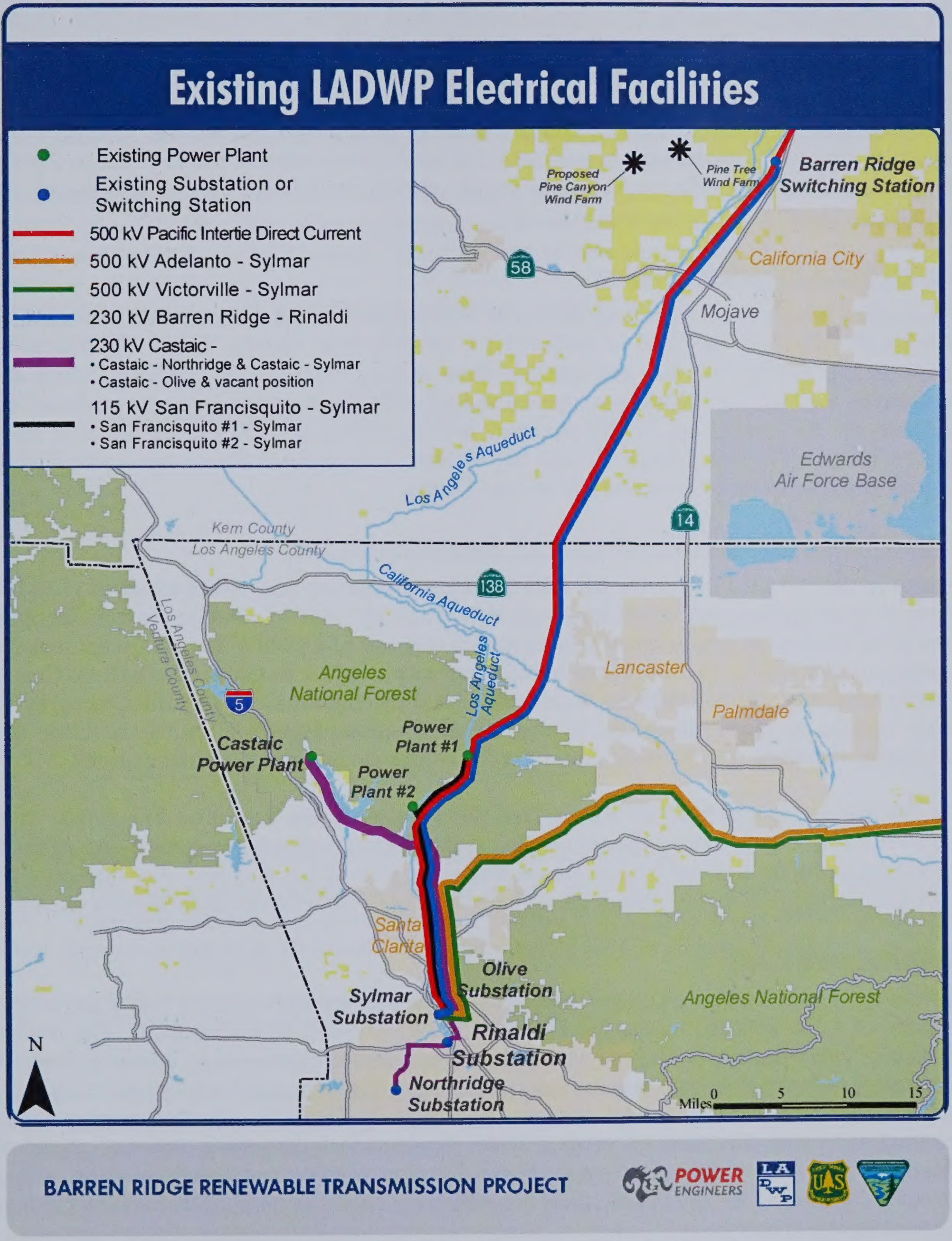
Within the Project area, which generally extends from the Tehachapi Mountains and Mojave Desert areas to the San Fernando Valley area of Los Angeles Basin, LADWP has the following existing high-voltage electrical facilities, which are illustrated in Figure 1-7, Existing LADWP Electrical Facilities:

- 500 kV Pacific Direct Current Intertie (PDCI)
- Barren Ridge Switching Station
- Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line (single- and quad-circuit towers)
- Castaic Transmission Lines
    - Castaic – Northridge (RS-J) and Castaic – Sylmar 230 kV transmission lines (double-circuit towers)

  - Castaic – Olive 230 kV transmission line (double-circuit tower with one vacant circuit position)
- Castaic Power Plant
- Sylmar, Olive, Rinaldi, and Northridge Substations

As explained below, only the existing BR-RIN 230 kV transmission line exists to transfer the renewable resources from these areas; therefore, investment in new transmission is needed to ensure a reliable transmission grid and to meet the delivery needs of renewable energy generation facilities.

FIGURE 1-7. EXISTING LADWP ELECTRICAL FACILITIES


Existing LADWP Electrical Facilities
● Existing Power Plant
● Existing Substation or Switching Station
500 kV Pacific Intertie Direct Current
500 kV Adelanto - Sylmar
500 kV Victorville - Sylmar
230 kV Barren Ridge - Rinaldi
230 kV Castaic -
• Castaic - Northridge & Castaic - Sylmar
• Castaic - Olive & vacant position
115 kV San Francisquito - Sylmar
• San Francisquito #1 - Sylmar
• San Francisquito #2 - Sylmar
Proposed Pine Canyon Wind Farm
Pine Tree Wind Farm
Barren Ridge Switching Station
California City
58
Mojave
Edwards Air Force Base
Los Angeles Aqueduct
14
Kern County
Los Angeles County
California Aqueduct
138
Los Angeles County
Ventura County
Angeles National Forest
Los Angeles Aqueduct
Lancaster
Palmdale
5
Castaic Power Plant
Power Plant #1
Power Plant #2
Santa Clarita
Olive Substation
Sylmar Substation
Rinaldi Substation
Northridge Substation
Angeles National Forest
N
Miles 0 5 10 15
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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500 kV Pacific Direct Current Intertie (PDCI)

The 500 kV PDCI consists of a single-circuit high-voltage direct current (DC) bipole transmission system. DC transmission lines are typically point-to- point transmission systems where current flows in one direction at a time, and are generally used for long-distance transmission (400 miles or more). The PDCI is jointly owned by Bonneville Power Agency (BPA), Southern California Edison, and the cities of Los Angeles, Glendale, Burbank, and Pasadena. The PDCI can be used to transfer 3,100 MW of hydroelectric power from the Pacific Northwest to California, or it can be used to transfer thermal power from California to the Pacific Northwest. The PDCI is currently at capacity.

Barren Ridge Switching Station

The existing Barren Ridge Switching Station is 12 miles north of the unincorporated community of Mojave, California, and west of Highway 14, off Pine Tree Canyon Road. The fenced-in station is 250 feet by 500 feet and contains three existing transmission positions, which are occupied by the Pine Tree Wind Development and BR-RIN Transmission Line. No positions are available for the connection of the proposed new double-circuit 230 kV transmission lines (Barren Ridge – Haskell Canyon #2 and #3) or interconnections of future renewable energy projects in the Tehachapi Mountains and Mojave Desert.

Barren Ridge - Rinaldi (BR-RIN) 230 kV Transmission Line

Parallel to the 500 kV PDCI is the BR-RIN 230 kV transmission line, which transfers 110 MW of power from hydroelectric plants in Owens Valley and 135 MW of wind power from the Pine Tree Wind Project. It has a current total operating capacity of 245 MW and maximum transfer capacity of 570 MW. The maximum transfer capacity is equal to the conductor's maximum transfer capability without suffering from heat-related deterioration. For a utility company to safely operate its electrical system it must avoid overextending its electrical facilities and conductors; therefore, the operating capacity is lower than the maximum transfer capacity.

The BR-RIN is close to LADWP's Pine Tree Wind Project in the Tehachapi Mountains. It is LADWP's only existing AC transmission line available to transfer the renewable energy from the Tehachapi Mountains and Mojave Desert area to the City of Los Angeles. Any disruption of service to the BR-RIN would prevent the transfer of 245 MW of wind and hydroelectric energy.

Castaic Power Plant

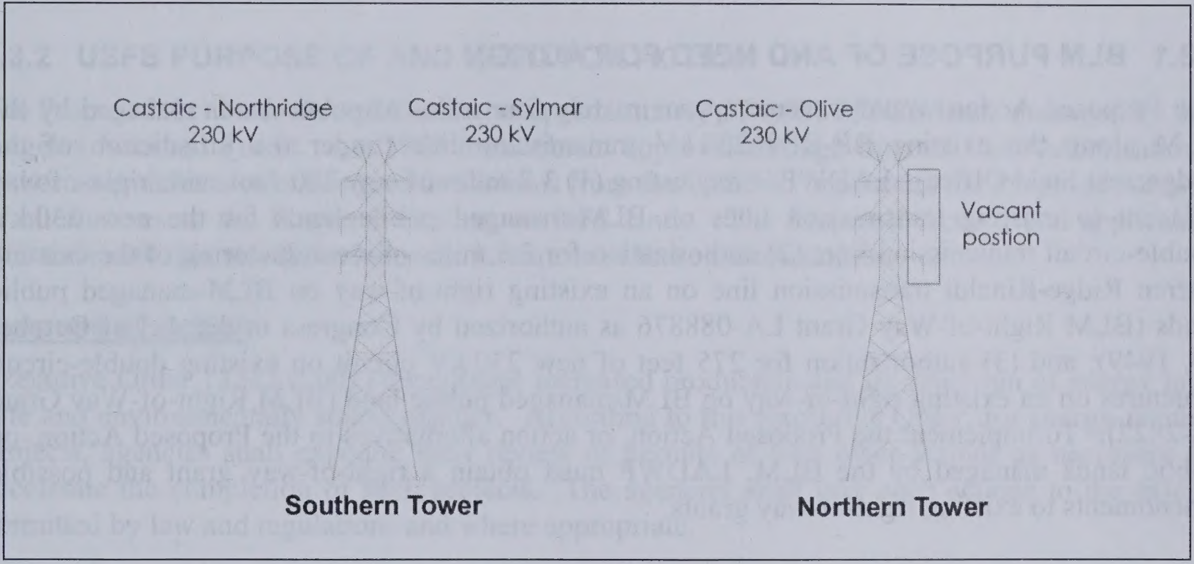
The Castaic Power Plant is a pumped storage hydroelectric generation station with a generating capacity of 1,250 MW that is used to balance LADWP's electrical system load. The facility consists of two water reservoirs, an upper and a lower reservoir connected by a tunnel, Pyramid Lake and Elderberry Reservoir, respectively, where water can be pumped uphill to Pyramid Lake or flow down to Elderberry through turbines, thus creating electricity. The power plant stores potential energy in the form of water. When the electrical demand is low and electrical generation high, water is pumped from the lower elevation reservoir to a higher elevation. When the electrical demand is high and electrical generation low, water is released through the turbines to create electrical energy.

Castaic Transmission Lines

From the Castaic Power Plant to the San Fernando Valley area, three circuits connect to three different LADWP substations in the Los Angeles Basin (Northridge, Sylmar, and Olive). The three circuits are carried on two parallel double-circuit 230 kV towers that make up the Castaic Transmission Corridor (refer to Figure 1-8). The southern towers carry the Castaic – Northridge and Castaic – Sylmar 230 kV circuits. The northern towers carry the Castaic – Olive 230 kV circuit, and the second position is vacant.

The Castaic Transmission Corridor has a maximum transfer capacity of 2,000 MW and operating capacity of 1,300 MW. The Castaic transmission lines currently do not connect to the renewable energy resource areas in the Tehachapi Mountains and Mojave Desert.

FIGURE 1-8. CASTAIC TRANSMISSION CORRIDOR CIRCUITS



Rinaldi, Northridge, Sylmar, and Olive Receiving Stations

LADWP has four receiving stations within the Project area—Rinaldi, Northridge, Sylmar, and Olive. Receiving stations step down electrical energy, such as converting 500 kV to 230 kV. These stations are part of an electrical system that services the Los Angeles basin.

1.3 AGENCY USE OF THIS DOCUMENT

A portion of the Barren Ridge Renewable Transmission Project, as proposed, would be constructed within or adjacent to existing LADWP rights-of-way on public lands managed by the USFS and BLM. The Project has been determined to be a “major Federal action […] significantly affecting the quality of the human environment” as set forth at section 102(2)(C) of NEPA, 42 USC 4332(2)(C). NEPA mandates that federal agencies consider the environmental consequences of such actions and their alternatives.

When the federal agency determines that a major federal action may "significantly affect the quality of the human environment," an EIS is required (42 USC 4332(2)(C)). The USFS and BLM are the federal Co-Lead Agencies responsible for the preparation of this Final EIS/EIR in compliance with the requirements of NEPA and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR Parts 1500 -1508).

The Project is also considered a governmental action under CEQA, thereby requiring the preparation of an EIR. The purpose of the EIR is to "identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (California Public Resources Code Section 21002.1). LADWP is the CEQA Lead Agency responsible for preparation of an EIR. LADWP, USFS, and BLM have prepared this joint Final EIS/EIR to evaluate potential alternatives and potential environmental impacts of the proposed BRRTP.

1.3.1 BLM PURPOSE OF AND NEED FOR ACTION

The Proposed Action would traverse approximately four miles of public lands managed by the BLM along the existing BR-RIN 230 kV transmission line (under the jurisdiction of the Ridgecrest Field Office). LADWP is requesting (1) 3.7 miles of new 200-foot-wide right-of-way adjacent to existing transmission lines on BLM-managed public lands for the new 230 kV double-circuit transmission line; (2) authorization for 3.8 miles of reconductoring of the existing Barren Ridge-Rinaldi transmission line on an existing right-of-way on BLM-managed public lands (BLM Right-of-Way Grant LA-088876 as authorized by Congress in the Act of October 10, 1949); and (3) authorization for 275 feet of new 230 kV circuit on existing double-circuit structures on an existing right-of-way on BLM-managed public land (BLM Right-of-Way Grant RI-2822). To implement the Proposed Action, or action alternatives to the Proposed Action, on public lands managed by the BLM, LADWP must obtain a right-of-way grant and possible amendments to existing right-of-way grants.

In accordance with sections 102(a)(7), 103(c), and 202(c) of the Federal Land Policy and Management Act (FLPMA) of 1976, public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way on public lands for systems for generation, transmission, and distribution of electric energy (Section 501(a)(4), 43 USC 1761(a)(1)). Taking into account the BLM's multiple use mandate, BLM's purpose and need for action is to respond to a FLPMA right-of-way application submitted by LADWP for a right-of-way grant. This grant would authorize the construction, maintenance, and operation of proposed 230 kV transmission lines (and ancillary improvements) on public lands administered by the BLM in accordance with BLM right-of-way regulations and other applicable federal laws and policies.

In conjunction with FLPMA, the BLM's applicable guidance includes the following:

- Executive Order 13212, dated May 18, 2001, 66 FR 28357 (May 22, 2001), which sets forth a policy that agencies shall take appropriate action, consistent with applicable laws, to expedite projects that will increase the production, transmission, or conservation of energy in a safe and environmentally sound manner.

- Section 211 of the Energy Policy Act of 2005 (EPAct 05 or EPAct), which established a goal for the U.S. Department of the Interior (DOI, BLM's parent agency) to approve at least 10,000 megawatts of non-hydropower renewable energy power on public lands by 2015.
- Secretarial Order 3285A1, Renewable Energy Development by the DOI, dated February 22, 2010. This Secretarial Order establishes the development of renewable energy as a priority for the DOI and creates a Departmental Task Force on Energy and Climate Change. It also announced a policy goal of identifying and prioritizing specific locations (study areas) best suited for large-scale production of solar energy and other renewables.

The BLM would decide whether to deny the proposed right-of-way, grant the right-of-way, or grant the right-of-way with modifications. Modifications may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

1.3.2 USFS PURPOSE OF AND NEED FOR ACTION

The Proposed Action route would traverse approximately 17 miles of NFS lands managed by the Angeles National Forest. LADWP must obtain approval through Special Use Authorizations and/or amendments to existing authorizations from the USFS to implement the Proposed Action, or alternatives to the Proposed Action, on NFS lands. The Proposed Action, and applicable alternatives to this action, includes the issuances of these authorizations.

Purpose of Action

Executive Order 13212 (2001) encourages increased production and transmission of energy in a safe and environmentally sound manner. According to this Executive Order, for energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects. The agencies shall take such actions to the extent permitted by law and regulations and where appropriate.

The USFS's purposes (objectives) in authorizing the Proposed Action, or an Alternative, are the following:

- Minimize adverse environmental effects to NFS lands, such as impacts to the following resources: visual, biological, cultural, recreation, air, soil, and water, among others as applicable (Land Management Plan, Part 1, pp. 38 and 47; Part 2, pp. 7, 32, 35, 69, and 79);
- Maintain the outstandingly remarkable values, potential classification, or free-flowing character of the eligible San Francisquito Canyon as a Wild and Scenic River. If the Proposed Action could compromise the eligibility, a suitability study would be completed for that eligible river segment prior to initiating activities (Land Management Plan, Standard 59, Part 3, p. 13);
- Minimize the effects of urbanization, or negative effects to open space and natural settings, on the Angeles National Forest (Land Management Plan, Part 2, pp.35, 67-70);
- Ensure that future Forest management activities such as wildland fire fighting, among others, are not detrimentally affected by the location and/or design of the Proposed

Action (Region 5 Supplement FSM 2726.43; Land Management Plan, Part 1, p. 19; Part 2, p. 37); and
- Ensure that the location of the transmission line on NFS lands maximizes the accommodation of future utility needs (Land Management Plan, Part 2, p. 121; Part 3, p. 59).

The USFS may deny authorization for special uses for a number of different reasons, such as if "the proposed use would be inconsistent or incompatible with the purpose(s) for which the lands are managed, or with other uses," or the proposed use "would not be in the public interest" [36 CFR 251.54(e)(5)(i) and (ii)]. To authorize LADWP to occupy and use NFS lands for the Proposed Action or an Alternative, the Proposed Action or Alternative must be consistent with the Land Management Plan (16 USC 1604(i)). Proposals that are inconsistent with Land Management Plans may be either rejected or modified to be consistent with the Land Management Plan (36 CFR 251.54(e)(1)(ii). If a project cannot be modified to be consistent with the Land Management Plan, the USFS may amend the conflicting management direction in the Land Management Plan as part of the project decision so that all actions occurring on NFS lands are consistent with the Land Management Plan (Forest Service Manual 1926.41(1)).

Need for Action

Pursuant to the FLPMA of 1976 (as amended), the USFS's need for action is to respond to applications from LADWP for a Special Use Authorization to construct, maintain, and use transmission lines (and ancillary improvements) through the Santa Clara/Mojave Rivers Ranger District of the Angeles National Forest. The USFS would consider the application for use of NFS lands to ensure that the Proposed Action is in the public interest and is appropriate based on the governing land management plan. FLPMA provides the authority to the Secretary of Agriculture (USFS) to issue, renew, or grant authorizations to occupy, use, or traverse NFS lands for the generation, transmission, and distribution of electrical power (43 USC 1761).

The USFS is required (under 36 CFR 219.10) to review all site-specific projects, including applications for Special Use Authorizations, to ensure they are consistent with the 2005 Angeles National Forest Land Management Plan ("LMP"), per the National Forest Management Act (NFMA) (16 U.S.C 1600-1614, as amended). As noted above, the USFS cannot issue Special Use Authorizations to LADWP without first ensuring a project's consistency with the LMP (through improvement in design and/or LMP amendment). Any proposed LMP amendments pertaining to this Project would be included as part of the need for action and included in the appropriate Alternatives, including the Proposed Action, analyzed in this document. Details of the LMP amendments required to approve the Proposed Action are described in the Proposed Action and Alternative descriptions (Chapter 2 of this document).

Necessary amendments to the LMP would be made using the amendment process defined in the Forest Service Manual 1920 and Forest Service Handbook 1909.12, following all "appropriate public notification and satisfactory completion of NEPA procedures." The decision by the USFS to approve or deny Forest Plan amendments associated with the Proposed Action and each of the Project Alternatives in this Final EIS/EIR would be based, in part, on the findings of the impact analyses reported in this Final EIS/EIR and also on the NFMA determination of the consistency of the proposed use with the parameters specified in the LMP.

1.3.3 LADWP'S CEQA REQUIREMENTS

CEQA applies to all discretionary activities proposed to be carried out or approved by California public agencies, including state, regional, and local agencies, unless an exemption applies (CEQA Guidelines Section 15378). As a municipal utility in the State of California, LADWP is required to analyze the proposed Project under CEQA. To implement and construct the BRRTP, LADWP must evaluate the Project's environmental impacts and disclose them in an EIR for public review and comment, and for consideration of Project approval by the LADWP Board of Commissioners.

1.4 PERMITS/AUTHORIZATIONS/CONSULTATIONS

The BRRTP would conform to all relevant federal, state, and local statutes, regulations, and plans. Table 1-1 lists the anticipated authorizations, permits, reviews, and approvals.

TABLE 1-1. AUTHORIZATIONS, PERMITS, AND APPROVALS

Triggering Action	Permit/Approval	Accepting Authority/Approving Agency	Statutory Reference
FEDERAL			
Proposed construction, operation, maintenance and decommissioning would occur in part on lands under USFS and BLM management	National Environmental Policy Act (NEPA) compliance - Environmental Impact Statement (EIS)	Federal Co-Lead Agencies: USFS and BLM	NEPA, 40 CFR Parts 1500 et seq., 43 CFR Part 2800
Proposed construction, operation, maintenance and decommissioning would occur in part on public lands under USFS management	Special Use Authorization or Easement	USFS	36 CFR 251
Proposed construction, operation, maintenance and decommissioning would occur in part on lands under BLM management	Grant of Right of Way (ROW) and Temporary Use Permit	BLM	Federal Land Policy and Management Act (FLPMA) of 1976 (PL 94-579); 43 CFR Part 2800
Grant of Special Use Authorization or Easement by USFS and Right-of-Way by BLM	Biological Assessment (BA), and Biological Opinion (BO)	USFWS	Endangered Species Act (ESA), Section 7
Grant of Special Use Authorization or Easement by USFS and Right-of-Way by BLM	National Historic Preservation Act (NHPA) compliance, Section 106	USFS, BLM, and California State Historic Preservation Office (SHPO)	National Historic Preservation Act (NHPA) of 1966; 36 CFR 800
Proposed construction, operation, maintenance and decommissioning may occur across or within federal highway rights-of-way	Permit to cross Federal Aid Highway	Federal Highway Administration (FHWA)	23 CFR 1.23 and 1.27; 23 CFR 645 Subpart B; 23 CFR 77
Proposed construction, operation, maintenance and decommissioning may occur near or within air traffic corridors	Notice of Proposed Construction or Alteration	Federal Aviation Administration (FAA)	14 CFR 77, Objects Affecting Navigable Airspace
Proposed construction may occur in part within a floodplain and/or wetland	Floodplain Assessment and Findings	USFS and BLM	10 CFR 1022
Proposed construction may involve discharge of dredged or fill materials in Waters of the U.S. and/or wetlands	Clean Water Act (CWA) 404 Permit (Individual or Nationwide)	U.S. Army Corps of Engineers	Clean Water Act (CWA), Section 404; 33 CFR 320-330
STATE OF CALIFORNIA			
Proposed project is located in California	CEQA compliance – Environmental Impact Report	Los Angeles Department of Water and Power	CEQA, California Public Resources Code, Sec. 21000 et seq.

Triggering Action	Permit/Approval	Accepting Authority/Approving Agency	Statutory Reference
Proposed construction, operation, maintenance and decommissioning may occur in part on lands under California State Lands Commission management	Right of Way Grant and/or Use Permit	California State Lands Commission	California Public Resources Code, Section 6501-6509
Proposed construction, operation, maintenance and decommissioning may result in take of California endangered or threatened species	Incidental Take Permit	California Department of Fish and Game, Central (4) and South Coast (5) Regions	California Fish and Game Code, Section 2081
Proposed construction may involve the alteration of a river, stream, or lake	Streambed Alteration Agreement	California Department of Fish and Game, Central (4) and South Coast (5) Regions	Fish and Game Code, Section 1602 and 1603
Proposed construction may impact cultural resources that are listed in or eligible to be listed in the National Register of Historic Places (NRHP)	Consultation pursuant to Section 106 of the NHPA	California State Historic Preservation Office	California Public Resources Code, Section 5097.5
Proposed construction, operation, maintenance and decommissioning may occur across or within California highway rights-of-way	Encroachment Permit	California Department of Transportation, Kern and Los Angeles Counties	California Vehicle Code, Division 1, Chapter 3; Division 2, Chapters 2.5 and 5.5; Division 6; Chapter 7; Division 13; Chapter 5; Division 14.1; Chapters 1 and 2; Divisions 14.8 and 15
Proposed project may involve point discharge of waste water into surface waters of the State	State Waste Discharge Requirements (WDRs)	State Water Resources Control Board – California Water Quality Control Boards for Lahontan and Los Angeles Regions	Porter-Cologne Water Quality Act
Proposed construction may involve storm water discharges to surface waters of the State	General Discharge Permits for Storm Water Associated with Construction Activity	State Water Resources Control Board – California Water Quality Control Boards for Lahontan and Los Angeles Regions	Federal Clean Water Act, Section 402
Proposed action, undertaking, or project which may result in discharge of dredged or fill material into waters of the State	Water Quality Certification	State Water Resources Control Board	Federal Clean Water Act, Section 401
Proposed construction, operation, or maintenance may include a utility crossing over State Water Project facilities or work within a Department of Water Resources right-of-way	Encroachment Permit	California Department of Water Resources	California Public Resources Code, Section 12899.1

CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) both require consideration of a reasonable range of alternatives to the Proposed Action. In addition, CEQA requires the consideration of how to avoid or substantially lessen any of the significant or adverse effects of the Project. This chapter summarizes the development of the range of alternatives considered, describes the alternatives considered and eliminated from analysis, provides a detailed description of the proposed Barren Ridge Renewable Transmission Project (BRRTP or Project) and the Alternatives analyzed in detail, offers a comparison between the Alternatives analyzed, and presents the rationale behind the selection of the Environmentally Superior Alternative per CEQA and the Agency Preferred Alternative per NEPA.

2.1.1 ALTERNATIVES CONSIDERED AND ELIMINATED

The federal and State lead agencies identified the following alternatives, but eliminated them from detailed analysis in the Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) because they either did not meet the Project purpose and need/objectives or were determined to be infeasible (see Alternatives Development Report in Appendix B of this Final EIS/EIR).

- Generation Alternatives
    - Energy Conservation and Demand-Side Management
    - Distributed Generation and In-Basin Generation Expansion
    - Solar Generation
- Design Alternatives
    - Accessing Other Renewable Areas
    - Direct Current Technology
    - Quad-Circuit Towers
    - Alternative Voltages
    - Underground Transmission
    - Only Reconductor Existing Transmission Line (No New Transmission Line)
    - Only New 230 kV Transmission Lines (No Reconductoring of BR-RIN)
- Routing Alternatives
    - Midway to Vincent Corridor
    - Bouquet Canyon Alternative
    - Antelope Valley Alternative
    - Elizabeth Lake Tunnel
    - Haskell Canyon Switching Station Site B

2.1.2 ALTERNATIVES CONSIDERED IN DETAIL

The federal and State lead agencies identified the five Alternatives below to be carried forward and analyzed in this Final EIS/EIR: the No Action Alternative, the Proposed Action (Alternative 2), Alternative 1, Alternative 2a, and Alternative 3.

No Action Alternative

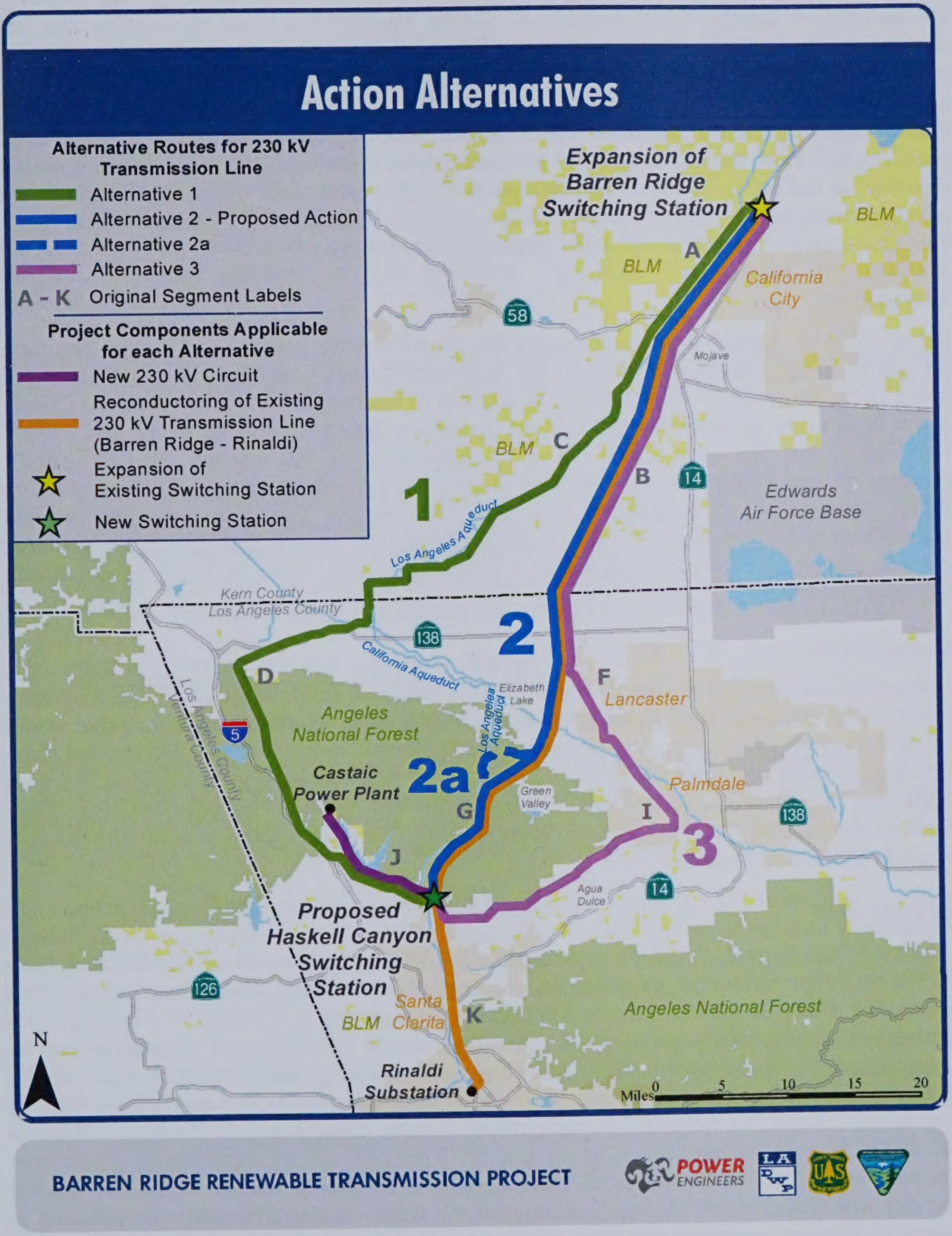
The No Action Alternative is required by NEPA and CEQA. Under the No Action Alternative, the construction of the new 230 kilovolt (kV) transmission line, addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, reconductoring of the existing Barren Ridge to Rinaldi (BR-RIN) 230 kV transmission line, construction of a Haskell Canyon Switching Station, and expansion of the existing Barren Ridge Switching Station would not occur. Current, ongoing operation and maintenance activities for existing transmission line and switching station facilities in the Project area would continue by utility maintenance personnel.

Action Alternatives

Each action Alternative includes the construction, operation, maintenance, and decommissioning of the same five Project components, listed below, but proposes alternate routes for the proposed 230 kV double-circuit transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. These components are illustrated in Figure 2-1.

1) Expansion of the existing Barren Ridge Switching Station;
2) Construction of a new switching station in Haskell Canyon;
3) Construction of a new 230 kV double-circuit transmission line from the Los Angeles Department of Water and Power (LADWP) Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station (item #2 above); length of the transmission line would vary by Alternative;
4) Reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger-capacity conductors between the Barren Ridge Switching Station and the Rinaldi Substation;
5) Addition of 12 miles of new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant.

FIGURE 2-1. ACTION ALTERNATIVES


Action Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
BLM
California City
Mojave
58
14
138
126
5
Edwards Air Force Base
Los Angeles Aqueduct
Kern County
Los Angeles County
Los Angeles County
Ventura County
California Aqueduct
Elizabeth Lake
Lancaster
Palmdale
Angeles National Forest
Castaic Power Plant
Green Valley
Agua Dulce
Proposed Haskell Canyon Switching Station
Santa Clarita
Rinaldi Substation
1
2
2a
3
A
B
C
D
F
G
I
J
K
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Proposed Action (Alternative 2)

The new 230 kV double-circuit transmission line for Alternative 2 would be 61 miles long and run from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, paralleling LADWP's existing BR-RIN 230 kV transmission line for the entire length. Impacts would be concentrated along this utility corridor. The addition of a new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would occur in a separate utility corridor from that of the new 230 kV transmission line. This Alternative would have the potential to affect portions of unincorporated Kern and Los Angeles Counties; the unincorporated communities of Mojave, Willow Springs, Antelope Acres, Elizabeth Lake, Green Valley, and Saugus; and cities of Santa Clarita and Los Angeles.

Alternative 1

The new 230 kV double-circuit transmission line for Alternative 1 would be 83 miles long from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station and would be the westernmost Alternative. The addition of the new 230 kV circuit from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would parallel the new 230 kV transmission line for eight miles. The reconductoring of the existing BR-RIN 230 kV transmission line would occur in a separate utility corridor. Alternative 1 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; the unincorporated communities of Mojave, Holiday Valley Estates, Castaic, and Saugus; and cities of Santa Clarita and Los Angeles. Eight miles of the new transmission line would be constructed utilizing helicopter mitigation.

Alternative 2a

Alternative 2a's new 230 kV double-circuit transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would be 63 miles long and would follow a route very similar to the Proposed Action (Alternative 2). The two Alternatives share the same proposed alignment for 56 miles, but for seven miles, Alternative 2a would be re-routed around the unincorporated community of Green Valley and would run outside of existing utility corridors through the Angeles National Forest (ANF). The same communities as Alternative 2 would be potentially impacted.

Alternative 3

The new 230 kV double-circuit transmission line for Alternative 3 would be 76 miles long from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. This Alternative would be the easternmost Alternative. Approximately 38 miles of Alternative 3's northern alignment would parallel the reconductoring of BR-RIN, and impacts would be concentrated within the same corridor. Thirty-four miles of the southern portion of the Alternative would be placed in a separate utility corridor from the reconductoring; 11 miles of Alternative 3 would be within an existing utility corridor containing only Southern California Edison (SCE) transmission lines. The installation of the new 230 kV transmission circuit from Castaic Power Plant to the proposed Haskell Canyon Switching Station would not share a corridor with the new 230 kV double-circuit transmission. Alternative 3 has the potential to impact portions of unincorporated Kern and Los Angeles Counties; unincorporated communities of Mojave, Willow Springs, Leona Valley, Antelope Acres, Agua Dulce, Castaic and Saugus; and cities of Lancaster, Palmdale, Santa Clarita, and Los Angeles.

Decisions to be Made by BLM

This document address both planning and implementation decisions. Planning decisions differ from implementation decisions in that they allocate land uses, rather than approve a specific action. On BLM-managed land, the application area is within the California Desert Conservation Area (CDCA) planning area, which requires that all transmission lines over 161 kV are placed within a designated corridor, or be considered through the planning process. On BLM-managed land, all portions of the action Alternatives would be entirely within a designated corridor. For the purposes of this document, the BLM would make the following implementation decisions:

For the implementation (construction, operation, maintenance, and decommissioning) of any one of the action Alternatives on BLM-managed public lands, BLM will need to take the following actions:

1. Grant 3.7 miles of new 200-foot-wide right-of-way adjacent to existing transmission lines for the new 230 kV double-circuit transmission line;
2. Authorize 3.8 miles of reconductoring of the existing Barren Ridge-Rinaldi transmission line on an existing right-of-way on BLM-managed lands (BLM Right-of-Way Grant LA-088876 as authorized by Congress in the Act of October 10, 1949); and
3. Authorize 275 feet of new 230 kV circuit on existing double-circuit structures on an existing right-of-way on BLM managed lands (BLM Right-of-Way Grant RI-2822).

2.2 DEVELOPMENT OF ALTERNATIVES

2.2.1 NEPA & CEQA REQUIREMENTS FOR ALTERNATIVES

NEPA and CEQA both require consideration of a reasonable range of alternatives to the Proposed Action. In addition, CEQA requires the consideration of how to avoid or substantially lessen any of the significant or adverse effects caused by the Project. The NEPA and CEQA requirements for the identification of project alternatives are described below.

The Council on Environmental Quality's NEPA Regulations (40 CFR 1502.14) require an EIS to present the environmental impacts of the proposed action and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision makers and the public. The analysis of Alternatives shall:

(a) Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative if one or more exists, in the draft statement, and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

CEQA Guidelines (Section 15126.6) state the following:

(a) An EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.

(b) The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

(c) The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

(d) The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

(e) The EIR shall include the evaluation of the "No project" alternative.

(f) The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.

An Alternatives Development Report (refer to Appendix B of this Final EIS/EIR) was prepared to document the development of alternatives and determine which alternatives would be considered for full analysis in the Draft EIS/EIR. The Alternatives Development Report documents the range of alternatives that were considered, describes the approach and methodology used in evaluating potential alternatives, and provides rationale for elimination or retention of alternatives. Through a siting and routing evaluation, the scoping process, supplemental studies and consultations, and input provided by the public, a range of alternatives were identified. The siting and routing evaluation identified nine preliminary routing paths (Segments A though I). During the scoping process, additional routing alternatives or modifications of the Segments were suggested by the public. The public also suggested different types of generation and design alternatives.

To determine which alternatives would be analyzed in this Final EIS/EIR, alternatives were evaluated to determine whether they would:

1. Attain the purpose and need/objectives of the Project.
2. Have the potential to avoid or substantially lessen any of the significant or adverse effects of the Project.
3. Be considered feasible.

Sixteen alternatives (categorized as generation and transmission, design, or routing alternatives) were considered and eliminated from further study. Some of the preliminary routing paths were modified and later combined to create end-to-end routing Alternatives carried forward for evaluation in this Final EIS/EIR.

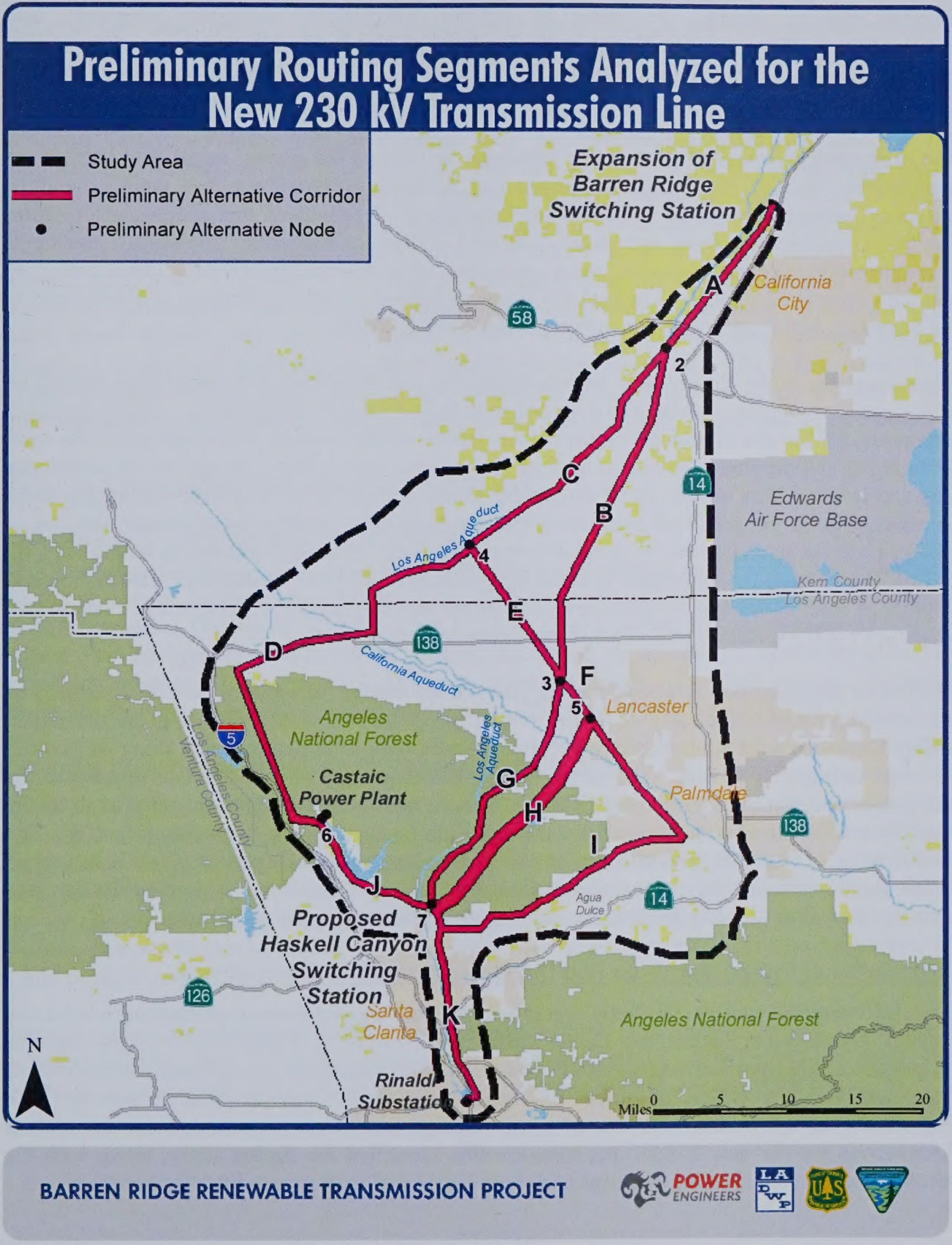
Regional Siting and Routing Evaluation

In May 2007, LADWP conducted a regional siting and routing evaluation for the proposed Barren Ridge to Castaic 230 kV Transmission Line Project (renamed in March 2008 as the Barren Ridge Renewable Transmission Project). A study area for the siting of an electrical transmission line was identified by utilizing physical features of the area to create boundaries. Interstate 5 (I-5) became the western boundary; the northern boundary followed the Tehachapi Mountains; State Route 14 and Edwards Air Force Base created an eastern boundary; and the Santa Clara River and San Gabriel Mountains formed the southern boundary. Because multiple crossings of any these features by the proposed Project would be very difficult, they formed a reasonable geographical boundary to the area in which the proposed Project would be feasible. The area measured approximately 819,000 acres (approximately 1,280 square miles), and was utilized as the basis for data inventory and mapping and sensitivity analyses.

Environmental resource data were gathered within the study area, and resource sensitivity was developed for six disciplines: land use, visual resources, biological (wildlife and botanical) resources, cultural resources, water resources, and geohazards. "Sensitivity" is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation, maintenance, and decommissioning of the proposed high-voltage transmission line. Sensitivity levels were categorized as exclusion, high avoidance, moderate avoidance, or low avoidance. Areas of low sensitivity and linear features (e.g., highways, existing transmission lines, pipelines, aqueducts) were considered siting opportunities for the new 230 kV transmission line. Resource data were then mapped in a geographic information system (GIS) to identify areas of opportunity or constraint, and ground reconnaissance was completed to verify and supplement inventory mapping.

Several potential corridors were eliminated from further consideration due to dense urban development, other conflicting land uses, transmission reliability constraints, or the potential to add significant length to the proposed transmission line. As a result, over 200 miles of preliminary routing segments or corridors (also known as Segments A through K) were identified for the siting of a new 230 kV transmission line, reconductoring of an existing transmission line, and addition of a new 230 kV circuit. Nine preliminary routing segments (Segments A through I) were identified for the new 230 kV transmission line, which are illustrated in Figure 2-2. Some of the routing segments were adjusted or modified based on public input, preliminary environmental review, and preliminary electrical system studies. Segment J represents the alignment for the addition of a new 230 kV circuit. Segment K represents the southern portion of the reconductoring of the existing BR-RIN 230 kV transmission line. These segments were later combined to create end-to-end routing "alternatives" as discussed further in Section 2.6.

FIGURE 2-2. PRELIMINARY ROUTING SEGMENTS ANALYZED FOR THE NEW 230 KV TRANSMISSION LINE


Preliminary Routing Segments Analyzed for the New 230 kV Transmission Line
Study Area
Preliminary Alternative Corridor
Preliminary Alternative Node
Expansion of Barren Ridge Switching Station
A
B
C
D
E
F
G
H
I
J
K
2
3
4
5
6
7
58
14
138
126
5
California City
Edwards Air Force Base
Kern County
Los Angeles County
Los Angeles Aqueduct
California Aqueduct
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
Agua Dulce
Los Angeles County
Ventura County
Proposed Haskell Canyon Switching Station
Santa Clarita
Rinaldi Substation
Angeles National Forest
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Scoping Process and the Development of Alternatives

In spring 2008, public scoping for the BRRTP was conducted to determine the scope of issues to address, and to identify the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed in the Draft EIS/EIR. For a full discussion of the public scoping process, please refer to Chapter 7 of this Final EIS/EIR. The public suggested a number of alternatives to the Proposed Action that included system, design, and routing alternatives.

The comments received at the scoping meetings, as well as via phone, email, and mail, were analyzed to identify the significant issues and formulate alternatives that would avoid or minimize adverse impacts to environmental resources. Analysis of this scoping information identified significant issues associated with the following resources: biological resources, cultural resources, earth resources, water resources, land use, and recreation. These resources and their associated significant issues have been considered in the development of alternatives to the Proposed Action and drive the analysis in this Final EIS/EIR.

Some residents in the Project area recommended the use of tubular steel monopoles instead of lattice steel structures, or suggested undergrounding of transmission lines. Some residents recommended the use of a single-tower system (multi-circuit towers) to accommodate the need for existing and proposed towers, as well as to minimize right-of-way expansion by combining new and existing lines on one set of structures. Direct current (DC) lines were recommended as an alternative to the proposed alternating current (AC). Residents also requested the use of niobium wire as an alternative to aluminum or copper wire. Electrical generation within the City of Los Angeles was recommended to avoid long-distance electrical transmission distribution and impacts to rural communities. People also inquired about upgrading the electrical transmission system to a 500 kV instead of 230 kV transmission system.

The public proposed two localized routing alternatives during the scoping period. Residents of the unincorporated community of Green Valley proposed the first, referred to as the Green Valley Re-route, to be approximately one quarter-mile west of the community along an existing fire road through NFS lands. The Green Valley Re-route would avoid possible impacts to the unincorporated community of Green Valley. The second routing suggestion, referred to as the 110th Street Re-route, was proposed by the residents to occur along Segments F and H. The modification of Segment F would parallel 110th Street and connect Segments F and H instead of following along the existing transmission lines to Antelope Substation. This modification was proposed to follow property lines and avoid bisecting private property in the area.

Informational Public Meetings and the Development of Alternatives

Five informational public meetings were held in the unincorporated communities of Lake Hughes, Agua Dulce, Saugus, and Leona Valley, and Mojave in February 2009 to give updates on project studies and alternatives development. The Project team, comprising representatives from LADWP, the U.S. Department of Agriculture, Forest Service (USFS), and the U.S. Department of the Interior, Bureau of Land Management (BLM), presented the six routing Alternatives for the new 230 kV transmission line identified for further study, along with the recommendation to eliminate Segment D and the Green Valley Re-route from further study.

The comments received were very similar to those received during the scoping period. Residents in the Project area suggested localized alternatives to the Proposed Action, consideration of in-basin generation of renewable resources, and sharing of transmission lines and renewable resources with other utility companies. Residents in the unincorporated communities of Green Valley and Elizabeth Lake recommended the use of multi-circuit towers instead of numerous double- or single-circuit towers. Undergrounding was suggested along Segments B, C, and E, and in the unincorporated communities of Elizabeth Lake, Green Valley, Leona Valley, and the Antelope Valley. Tubular steel monopoles were recommended in Antelope Valley. To minimize the number of new transmission line corridors, residents in the unincorporated community of Quartz Hill recommended moving the 110th Street Re-route to 115th Street (following SCE's Tehachapi Renewable Transmission Project's proposed alignment through the area). The public also requested consideration of a 500 kV transmission line system instead of the proposed 230 kV transmission line system. Residents along Segment D suggested utilization of existing transmission line corridors instead of impacting undisturbed areas. Questions were asked about electric and magnetic fields (EMF), eminent domain, and property values. Mitigation to purchase land around Lake Elizabeth was also suggested. The public, along with elected officials, strongly recommended reconsideration of Segment D to avoid impacts to the unincorporated communities of Elizabeth Lake, Green Valley, Leona Valley, and Agua Dulce.

2.2.2 ALTERNATIVES SCREENING CRITERIA

Meeting the Purpose and Need/Objectives

Each Lead Agency has its own purposes to consider in evaluating a proposed project/action and the alternatives to the proposed project/action. NEPA regulations (promulgated by the Council on Environmental Quality at 40 CFR 1502.13) and CEQA Guidelines (at Section 15124(b)) explain that an agency's statement of purpose and need or objectives should describe the underlying purpose of the proposed project or need for action. Detailed purpose and need statements by each of the lead agencies are found in Chapter 1 of this Final EIS/EIR.

Potential to Avoid or Minimize Environmental Effects

Per NEPA Regulations (40 CFR 1500.2(e)), the NEPA process is used to identify and assess the reasonable alternatives to proposed actions that would avoid or minimize adverse effects of these actions upon the quality of the human environment. CEQA Guidelines (Section 15126.6(b)) also state that the discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

Through scoping, subsequent public involvement efforts, and preparation of preliminary technical reports, the following potentially significant issues were identified with the construction, operation, maintenance, and decommissioning of the proposed BRRTP.

TABLE 2-1. SIGNIFICANT ISSUES OF THE BRRTP

RESOURCE	POTENTIAL SIGNIFICANT ISSUES
Biological Resources	• Potential for adverse effects to rare, threatened, endangered, and special-status species. • Considerable concern for Riparian Conservation Areas and the spread of noxious weeds throughout Angeles National Forest lands. • Impacts to avian species and increased raptor predation of sensitive species due to the use of lattice towers. • Potential for loss of habitat.
Cultural Resources	• Impacts to historical, cultural and archaeological resources in the Project area.
Earth Resources	• Adverse impacts to soils throughout the proposed Project area, including sedimentary rocks and fossils.
Water Resources	• Impacts to drainages, wetlands, Waters of the State, Waters of the U.S., and intermittent and ephemeral streams.
Land Use	• Acquisition of private property, eminent domain, and the expansion of transmission line rights-of-way and easements. • Decreased property values with additional transmission lines. • Conflicts with land use and recreation policies of the Angeles National Forest Land Management Plan.
Wildfire Suppression and Management	• Impacts to fire suppression efforts.
Recreation	• Impacts to recreational facilities and trails. • Impacts to the quality of the Antelope Valley California Poppy Reserve, Pacific Crest Trail, Wild and Scenic River Corridor, and wilderness.
Visual Resource	• Adverse effects to visual resources of the area, especially those important to the character of the ridgelines, as well as views from homes, communities, businesses, trails, State Parks, the Angeles National Forest, BLM-managed lands, and other public lands.

Feasibility

CEQA Guidelines (Section 15126.6(f)(1)) state that a number of factors may be considered in determining which alternatives are feasible. These include, but are not limited to, the following:

- Suitability;
- economic viability;
- availability of infrastructure;
- general plan consistency;
- other plans or regulatory limitations;
- jurisdictional boundaries; and
- whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or if the site is already owned by the proponent).

According to NEPA's Forty Most Asked Questions No.2a, reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

2.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED ANALYSIS

NEPA and CEQA require an EIS/EIR to consider a reasonable range of alternatives to the project. In addition, CEQA requires the consideration of how to avoid or substantially lessen any adverse effects of the proposed project. The scoping process, informational public meetings, and preliminary studies identified sixteen alternatives to the Proposed Action.

The sections below provide a brief description of each alternative, the alternative's ability to meet the screening criteria, and a rationale for elimination of the alternative from full analysis in this Final EIS/EIR. The alternatives are categorized as generation, design, or routing alternatives and summarized in Table 2-2.

2.3.1 GENERATION ALTERNATIVES

Energy Conservation and Demand-Side Management

This alternative would involve increased energy conservation and demand-side management within the LADWP service area instead of interconnecting to generation from the Tehachapi Mountains and Mojave Desert. Energy conservation and demand-side management are currently an integral part of LADWP's strategy to meet customer needs. Energy-saving and efficiency efforts include the Consumer Rebate Program, the Refrigerator Exchange and Retire Program, the Low Income Refrigerator Exchange Program, Trees for a Green LA, the Small Business Direct Install Program, and the Compact Fluorescent Light Bulb Delivery Program. This alternative would continue these existing programs and invest in expanding them.

Energy conservation and demand-side management alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands, meet Renewable Portfolio Standard (RPS) goals (see Chapter 1), or achieve greenhouse gas emission reduction goals. While it could lead to avoidance and minimization of environmental effects from the construction of a new transmission line, it is not feasible to rely solely on this strategy to meet the electrical energy demands and RPS and greenhouse gas reduction goals.

Distributed Generation and In-Basin Generation Expansion

This alternative would involve the increased expansion of distributed generation, including solar facilities and fuel cells within the LADWP service area, and the development of additional large-scale in-basin generation instead of interconnecting to generation from the Tehachapi Mountains and Mojave Desert. Distributed generation entails the installation of new small electrical generating plants, typically less than 20 megawatts, at or near electric load centers. New in-basin generation could include facilities such as gas, biogas, small hydro-electric, solar, and geothermal power plants.

Increased distributed generation and small solar generation is already an integral part of LADWP's approach to meeting energy needs and RPS goals. Some of the programs that LADWP has implemented are the Distributed Generation Program, the Customer Generation Rebate Program, and the Residential Solar Initiative Program. In addition, LADWP has also recently upgraded a number of its generating stations to make them more efficient.

LADWP has implemented a number of distributed generation and in-basin generation programs. This alternative alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands, meet RPS goals, achieve greenhouse gas emission reduction, or increase overall system reliability, nor would it provide delivery of renewable energy at a level and within a timeframe necessary to meet the purpose and need/objectives.

Solar Generation

The solar alternative would involve the increased use of solar energy. LADWP has a Solar Energy Plan that consists of the following five programs that are mainly in the Los Angeles Basin:

(1) The Solar Incentive Program (SIP), which encourages LADWP ratepayers to install solar panels on their roofs. The goal is to install 130 MW of customer-owned solar systems by 2020;

(2) Feed-in Tariff (FiT) would allow a solar developer in the City of Los Angeles to sell wholesale power directly to LADWP through a long-term contract between the private seller and LADWP. The goal is to obtain 150 MW of solar power from developers by 2016;

(3) The new SunShares Program would provide residential customers the opportunity to invest in an LADWP solar power plant. The goal is to obtain approximately 100 MW of solar power from a SunShares power plant by 2020;

(4) The Utility Built (LADWP-owned Solar Projects) program would involve the installation of solar systems on LADWP-owned rooftops, reservoirs, and parking lots. LADWP has a goal of obtaining 400 MW of solar power from City-owned systems by 2014; and

(5) The Large-Scale Solar Program would involve LADWP procuring large-scale power purchase agreements from third-party solar developers. LADWP has a goal of obtaining 500 MW of utility-scale solar power from developers in the Mojave Desert by 2020.

The SIP, the SunShares Program, and FiT would be within the Los Angeles Basin. The Utility Built program would be mostly in-basin, as well. The Large-Scale Solar Program (or power purchase agreements) would largely be out-of-basin in order to access solar resources in the Mojave Desert, and would require transmission to the City of Los Angeles.

LADWP's Solar Energy Plan proposes to provide approximately 10% of LADWP's electrical demand. Although this alternative may avoid or minimize impacts of the Proposed Action, this alternative alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands or RPS goals. Additional transmission capacity may also be required to transfer solar energy from the Large-Scale Solar Program in the Mojave Desert area to the Los Angeles Basin.

2.3.2 DESIGN ALTERNATIVES

Accessing Other Renewable Areas

The Renewable Energy Transmission Initiative (RETI) has identified a number of high quality renewable energy areas in Southern California—the Salton Sea/San Diego, Southeastern California, and Tehachapi/Owens Valley. The Salton Sea/San Diego resource area is rich with renewable resources, including substantial amounts of geothermal potential near the Salton Sea, solar resources throughout the area, and wind resources in local mountain ranges. LADWP would need to construct transmission lines to access this renewable resource area. The Southeastern California area includes most of San Bernardino and Riverside counties; RETI has identified this resource area as having the largest quantity of potential resources (wind and solar). LADWP's existing transmission lines to this resource area have limited capacity to transfer that energy to the Los Angeles Basin.

LADWP's primary purpose and need/objective for the BRRTP is to access the Tehachapi/Owens Valley resource area. The Mojave Desert has some of the highest solar insolation in the world, along with the most economical solar resources. Furthermore, the Tehachapi Mountains have excellent wind resources. LADWP's existing BR-RIN transmission line currently accesses this renewable resource area; however, transmission capacity is limited. This alternative would consider accessing the Salton Sea/San Diego and Southeastern California resource areas.

This alternative would access renewable energy and assist in meeting goals for RPS and greenhouse gas reduction. However, to integrate intermittent renewable resources and maintain a reliable electrical system, LADWP needs to access a number of renewable resource areas. This alternative does not meet the purpose and need/objective to deliver renewable energy sources from the Tehachapi Mountains and Mojave Desert areas. LADWP would also not be able to utilize existing facilities, such as the pumped storage hydroelectric Castaic Power Plant power plant, to store energy to balance when it would enter the system. The need to access other renewable resource areas would require new transmission lines; therefore, this alternative would have similar impacts to those of the Proposed Action.

Direct Current Transmission

This alternative would utilize direct current (DC) for power transmission rather than alternating current (AC). DC conductors can transfer approximately twice the power of the proposed AC conductors and may also allow power transmission between unsynchronized AC distribution systems. This increases system stability by preventing cascading failures from propagating within a wider power transmission grid. The magnitude and direction of power flow through a DC transmission line can be directly commanded, and changed as needed to support the AC networks at either end of the DC link.

LADWP's existing transmission network contains both AC and DC transmission. Parallel to the BR-RIN is the existing ±500 kV Pacific Direct Current Intertie (PDCI), which utilizes DC technology. The PDCI is operating at capacity and cannot accommodate additional energy. To fully incorporate a new DC line into the existing AC system, conversion facilities would have to be built at the terminal ends (the Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station). The converter stations would be approximately 30 acres and include an inverter, three-phase alternating current switchgear, transformers, capacitors or synchronous condensers, filters for harmonics, and DC switchgear.

The DC conductors have the ability to transfer a greater capacity than AC conductors. Therefore, in this alternative, a new DC line would replace the proposed double-circuit 230 kV transmission line and existing BR-RIN. The DC towers would require similar ROW, tower heights, footprints, and tower-to-tower spans as that of the proposed 230 kV transmission line. The main difference would be that the DC system would require two-phase conductors versus the three-phase conductors of an AC system.

The DC system would meet the purpose and need/objective of the Project to transfer renewable energy, and assist LADWP in meeting goals for RPS and greenhouse gas reduction, and electrical energy demands. Although this alternative would minimize the number of transmission line towers and reduce the need for ROW, converter stations and the removal of the existing BR-RIN would be required—compromising all small hydroelectric generation plants—and it may increase the potential for impacts to air quality, land use, biological resources, earth resources, water resources, and visual resources. The DC system is a point-to-point system, and tapping into it to create a multi-terminal system is technically and economically not feasible. Therefore, the DC system may limit future interconnections into the larger LADWP network and the amount of renewable energy available for LADWP in meeting RPS goals. The converter stations also come at considerably higher costs without clear benefits as compared to an AC system, and therefore make this alternative less cost-effective for LADWP.

Quad-Circuit Towers

LADWP considered the use of quad-circuit towers along the existing BR-RIN corridor instead of the proposed double-circuit tower and existing single-circuit BR-RIN towers. The towers would be constructed adjacent to the existing transmission towers within new ROW and would require a 50-foot by 40-foot tower footprint, and would be approximately 120 feet in height, with tower-to-tower spans of 1,000 feet (which is very similar to that of the proposed double-circuit towers). The reconductored BR-RIN circuit and two new proposed circuits would be combined onto the same quad-circuit towers, and the existing BR-RIN towers would be removed; however, quad-circuit towers were examined and determined to be not feasible in the unincorporated community of Green Valley, due to ROW constraints. One position on the new towers would remain vacant for a possible future circuit. The existing 500 kV PDCI would remain unchanged. The removal of the existing BR-RIN towers and installation of the quad-circuit towers would reduce the number of towers and ROW needs by approximately 65 feet in comparison to the proposed Project, which would require a new 200-foot-wide ROW in addition to and adjacent to the existing BR-RIN and PDCI ROWs.

LADWP does not have existing 230 kV transmission lines along Segments C, D, E, F, H, and I, and therefore LADWP would not consider the use of quad-circuit towers along these corridors. The new quad-circuit towers would be constructed adjacent to the existing ±500 kV PDCI and require an additional 135-foot ROW.

A portion of the BR-RIN conductors, from Power Plant #2 to Haskell Canyon, hang on existing quad-circuit towers. To accommodate the weight of the proposed new Barren Ridge to Haskell Canyon transmission line (two circuits) and the reconductored BR-RIN, the existing towers would need to be raised approximately 20 feet. To avoid an interruption of service along the BR-RIN, a temporary transmission line would need to be constructed, requiring a temporary 80- to 100-foot-wide ROW.

This alternative would require less permanent rights-of-way and minimize permanent impacts to land use and visual resources and to USFS- and BLM-managed lands. The quad-circuit structures would not meet the purpose and need/objective to increase LADWP's system reliability and flexibility, increase delivery of renewable energy, or meet future electrical demands. Because of reduced system reliability, energy transfer capacity would be reduced, decreasing LADWP's ability to reduce greenhouse gas emissions, to meet RPS goals, and to interconnect and expand renewable energy resources. Greater temporary impacts would result from constructing the large quad-circuit towers and removing the existing BR-RIN.

Alternative Voltages

The voltage of a transmission line determines how much electricity the line can transmit, with higher voltage lines transmitting more electricity. In general, as the voltage increases, the height of the supporting towers, footprint of the towers, size of the insulators, distance between conductors on towers, and ROW widths also increase.

A single-circuit 500 kV transmission line between the Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station would have enough capacity to replace both the proposed 230 kV line and the existing BR-RIN line in this stretch. To construct a single-circuit 500 kV transmission line, a 200-foot-wide ROW would be required. Tower structures would require a 50-foot-square footprint and would be, on average, 150 feet tall. The proposed 230 kV line would not be constructed, and the existing BR-RIN would be removed between Barren Ridge and Haskell Canyon upon completion of the new 500 kV transmission line.

To accommodate a new 500 kV transmission line, the existing Barren Ridge and proposed Haskell Canyon Switching Stations would need to be converted from switching stations to much larger substations, which would require the incorporation of transformers and a 500 kV switchyard (approximately 600 feet by 600 feet). This option would more than double the size of the Barren Ridge and Haskell Canyon 500/230 kV Substations to approximately 1,000 feet by 600 feet each. The need for 500 kV to 230 kV conversions could also limit the number of future renewable energy projects that could interconnect to BRRTP.

A 500 kV double-circuit transmission line would require the conversion of the switching stations to substations, would have the potential to increase environmental impacts, and would deliver a capacity well beyond the needs of LADWP, and is therefore not considered. Lower voltage lines, such as double-circuit 115 kV or 69 kV transmission lines, would also require the conversion of the switching stations to substations and would have lower transfer capacities; they do not have the same power transfer capability as the Proposed Action and are therefore not considered for the Proposed Action.

The use of an alternative single-circuit 500 kV transmission line would meet the purpose and need/objective of the Project to transfer renewable energy and assist LADWP in meeting goals for RPS and greenhouse gas reduction, and electrical energy demands. However, LADWP may not be able to construct the necessary 500/230 kV substation within Haskell Canyon due to space limitations. Additionally, the increased footprints of the substations would have the potential to increase environmental impacts.

Underground Transmission

This alternative would install the transmission line underground in lieu of overhead transmission. Underground transmission systems in the United States are generally used in urban areas for lower-voltage distribution lines, and high-voltage (115 kV and above) underground transmission lines have been constructed only for short distances where overhead lines were not feasible (e.g., in the vicinity of airports, urban centers).

To put a high-voltage transmission line underground, such as the proposed 230 kV line, the line would need to be installed within an underground conduit. Generally, open-cut trenching techniques would be utilized for conduit installation. The trench for the conduit would normally be a minimum of five feet deep and four feet wide along the entire length of the underground sections. Where site-specific conditions dictate that open-cut trenching could not be utilized, tunneling would be used to install the conduit. Pre-formed concrete maintenance vaults would also be installed underground. Initially, the vaults would be used to pull cable through the conduits and splice the cables together during construction of the BRRTP. During operation, the vaults would provide access to the underground cables for maintenance, inspections, and repairs.

Underground construction is more difficult and results in greater clearing, grading, and land disturbance than overhead transmission line construction. Grading and clearing of trees and vegetation would be required along the ROW prior to excavation of the entire length of the transmission line. Large areas of disturbance would result from the excavation and associated activities, such as heavy equipment use and soil storage.

The installation of an underground transmission line would require more time than construction of an equivalent length of overhead line because of the time required for excavating trenches and constructing the duct banks, fluid reservoirs, and/or stop joints, and the limitations on times of the year available for construction, which would be chosen to limit the impacts to the environment.

The land required for operation and maintenance of underground transmission lines must remain free of secondary surface development or lengthy-rooted trees planted along the line route, and only vegetation that would not cause maintenance problems would be permitted above the underground route throughout the life of the Proposed Action. This contributes to a land use similar to that of a secondary road. Also, duct banks, fluid reservoirs, stop joints, and/or retaining vaults are required for certain underground technologies, increasing the need for cleared land and continued all-weather access for operation and maintenance.

An underground high voltage transmission line would meet the purpose and need/objective of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. The principle environmental advantage of undergrounding a transmission line would be the mitigation of adverse visual impacts of the transmission towers and conductors. However, an underground transmission line would still require above-ground ancillary facilities on or adjacent to the ROW, and result in substantially greater ground disturbance and longer construction duration than overhead transmission lines. It would create a greater potential for impacts to transportation, traffic, soils, and socioeconomics, and archaeological, cultural, biological, and water resources. Operation of underground transmission lines is more complex, and generally underground transmission lines are considered less reliable. If an outage occurred, repair times could increase. An underground system would not result in any substantial reduction in other environmental effects, and is also not cost-effective for long distances.

New Conductor Technology

Superconductors are still in the developmental stage. The longest high-voltage transmission line utilizing superconductors is only 2,000 feet long. The technology is currently considered infeasible for longer distances. Theoretically, use of superconductor technology could replace the proposed 230 kV and existing BR-RIN transmission lines with a single circuit on a new tower between the Barren Ridge and Haskell Canyon Switching Stations and the existing BR-RIN transmission towers could be removed, similar to the single-circuit 500 kV transmission line alternative. The principal environmental advantage of superconductors would be the mitigation of adverse visual impacts of the additional transmission towers and conductors. However, superconductors would still require above-ground ancillary facilities on or adjacent to the ROW, and would result in greater ground disturbance and longer construction duration than with standard transmission lines. Superconductors would create a greater potential for impacts to transportation, traffic, soils, and socioeconomics, and archaeological, cultural, biological, and water resources.

Only Reconductor Existing Transmission Line (No New Transmission Line)

Reconductoring of the existing BR-RIN transmission line would take approximately one year and would require the transmission line to be taken out of service for much of that time. North of the Barren Ridge Switching Station, seven LADWP small-scale hydroelectric power plants transmit their renewable electrical energy output onto the BR-RIN transmission line. These power plants do not have bypass capabilities, and, typical of such plants, they must generate energy to avoid deterioration to their electrical turbines. Therefore, because bypassing the power plants or halting their electrical output are not possible, a temporary transmission line would be necessary to reconductor the existing BR-RIN transmission line between Barren Ridge and Haskell Canyon. This temporary transmission line would typically consist of temporary wood poles for carrying the existing energized conductors along the entire stretch of the BR-RIN corridor. Once the transmission line is reconductored and in service, the temporary transmission line would be removed.

Without a new double-circuit 230 kV transmission line, the transfer capacity of the utility corridor from Barren Ridge to the proposed Haskell Canyon Switching Station would remain constrained. The LADWP would have limited ability to deliver renewable energy; to meet future electrical demands, RPS goals, and greenhouse gas reductions goals; and to interconnect and expand renewable energy facilities in the Tehachapi Mountains and Mojave Desert areas. Although there are impacts associated with the temporary transmission line, permanent impacts of this alternative would be less than that of the Proposed Action.

Only New 230 kV Transmission Line (No Reconductoring of BR-RIN)

This alternative would include construction of a new 230 kV double-circuit transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station, addition of a new 230 kV circuit on existing structures from the Castaic Power Plant to the proposed Haskell Canyon Switching Station, construction of the Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station.

This alternative would allow LADWP to access renewable resources in the Tehachapi Mountains and Mojave Desert areas. Removing the reconductoring portion of the Proposed Action would minimize the potential for impacts to environmental resources and reduce cumulative impacts of the Proposed Action. However, it would limit LADWP's ability to transfer renewable energy, meet future electrical energy demands, meet RPS goals, and reduce greenhouse gas emissions.

2.3.3 ROUTING ALTERNATIVES

Midway to Vincent Corridor

The Midway to Vincent Corridor is approximately 15.4 miles long and traverses the ANF from the designated I-5 Utility Corridor to the proposed Segment G. The Midway to Vincent Corridor is also a designated USFS utility corridor that contains two existing SCE 500 kV transmission lines (Midway – Vincent #1 and #2). During the siting study, it was identified as a potential routing segment for the siting of a new 230 kV transmission line. It was eliminated from further study because the alignment of the corridor traversed west to east across the ANF, and the purpose of the Proposed Action was to transfer energy from the north (Barren Ridge Switching Station) to the south (Haskell Canyon). The greater length of this routing segment has the potential to pose reliability issues, and additional footprint across the ANF would increase potential impacts to environmental resources.

After the 2009 Informational Public Meetings, the Midway to Vincent Corridor was reconsidered as a routing modification of a viable Segment D. It would avoid the constraints of the Castaic Power Plant, impacts to the Castaic Lake State Recreation Area and Land and Water Conservation Fund lands, and unstable terrain. The Midway to Vincent Corridor is not an end-to-end alternative; it is a routing segment through the ANF from the I-5 Utility Corridor to Segment G. In order for the Midway to Vincent Corridor to connect to the proposed Haskell Canyon Switching Station, this routing segment would require following Segment G south for 9.6 miles to the switching station (total distance of 25 miles).

The Midway to Vincent Corridor would meet the purpose and need/objective for the Project, but it would not significantly reduce or avoid impacts to land use, cultural, biological, and visual resources, or avoid geological hazards. The Midway to Vincent Corridor is much longer than the Proposed Action, and thus could potentially lead to more geographically extensive impacts. The increased length, steep topography, and limited existing access roads for construction could make the Midway to Vincent Corridor more difficult and costly to build in comparison to the Proposed Action.

Bouquet Canyon Alternative (Segment H, including the 110th and 115th Street Modifications)

The Bouquet Canyon Alternative is a routing segment for the siting of a new 230 kV transmission line from the Antelope Valley to the proposed Haskell Canyon Switching Station. This routing segment would consist of Segment H and the minor 110th and 115th Street modifications; it is not an end-to-end alternative to the Proposed Action.

Segment H was identified in the siting study as a routing segment from the Antelope Valley to the proposed Haskell Canyon Switching Station. A majority of Segment H would be on ANF lands and would mostly parallel the newly constructed SCE Antelope – Pardee transmission line. The last 1.5 miles would follow the SCE 66 kV Saugus – Del Sur transmission line that was removed. Unlike the other identified routing segments for the siting of a new transmission line, very limited access occurs along Segment H on the ANF. To minimize impacts to the area, helicopter construction would be required to construct the new transmission line. All other routing segments would be constructed via conventional ground construction (described in Section 2.2).

During the 2008 Public Scoping Meetings, residents in the western city of Lancaster area suggested the 110th Street modification to connect Segment F to Segment H, which would not follow the existing transmission lines to SCE's Antelope Substation. This modification was proposed to avoid bisecting private property near the Antelope Substation.

In February 2009 at the Informational Public Meetings, the same residents requested re-routing the modification to follow SCE's proposed Tehachapi Renewable Transmission Project (TRTP) alignment along 115th Street instead. This would minimize the creation of numerous new transmission line corridors and lessen impacts to residents. The 115th Street re-route is five miles long and no existing transmission lines are along this route. It would require slightly more improvements to existing access roads than the original alignment along Segments F and H.

The Bouquet Canyon Alternative would meet the purpose and need/objective for the Project. Ground disturbance and visual impacts would be minimized through the use of helicopter construction; however, impacts to air quality and noise would increase. Helicopter construction also poses construction and safety concerns that are not present for the Proposed Action. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects (Antelope – Pardee, TRTP and BRRTP) in the same vicinity.

Antelope Valley Alternative (Segments C and E)

The physiography of the Project area can be broken up into two different types: the northern portion of the Project area consists of the flat desert areas of the Mojave Desert and Antelope Valley, and the southern portion contains the mountains of the Angeles National Forest.

Two routing segments from the Mojave Desert area to Antelope Valley were identified for the siting of a new 230 kV transmission line: Segment B and the combination of Segments C and E (referred to as the Antelope Valley Alternative). Segment B is part of LADWP's Proposed Action and is approximately 27 miles long. It starts just north of the unincorporated community of Mojave, parallel to LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines, and travels south towards the Antelope Valley California Poppy Reserve. The Antelope Valley Alternative is 33 miles long and would also start just north of the unincorporated community of Mojave, parallel the Los Angeles Aqueduct southwest to Cottonwood Creek, then turn southeast and parallel three existing SCE high-voltage transmission lines to the Antelope Valley California Poppy Reserve. To identify which routing segment through the northern portion of the Project would be carried forward in the Final EIS/EIR, Segment B and the Antelope Valley Alternative were compared.

The Antelope Valley Alternative would meet the purpose and need/objective of the Project to transfer renewable energy, and assist LADWP in meeting RPS and greenhouse gas reduction goals and electrical energy demands. It would avoid impacts to residences close to the proposed Project's Segment B, but would create a new transmission corridor and increase the potential for impacts to visual resources, biological resources, water resources, air quality, and cultural resources. This alternative would also require more new access roads and improvements to existing access roads.

Segment C would require the creation of a new utility corridor and the construction and improvement of access roads, and has the potential to increase impacts to air quality, biological resources, cultural resources, visual resources, and water resources. However, it was retained for further study to allow Segment D to have a northern connection to the Barren Ridge Switching Station.

Segment E would require an additional 6.5 miles of line in comparison to the Proposed Action and would not significantly reduce or avoid impacts to air quality or biological, cultural, visual, and water resources.

Elizabeth Lake Tunnel

The unincorporated community of Green Valley recommended placing an underground transmission line within the Elizabeth Lake Tunnel (also known as the Los Angeles Aqueduct) as an alternative route to Segment G for the construction of the new 230 kV transmission line. From the Antelope Valley California Poppy Reserve, the transmission line would be constructed in a new utility corridor and then placed within the tunnel through the ANF. This alternative would traverse 0.1 mile of a Back Country Non-Motorized Land Use Zone.

The aqueduct was constructed for and is used for water conveyance. It is not a viable option for the housing of underground transmission lines. The aqueduct is a well-maintained facility, and LADWP does not have plans to replace it. Installing high-voltage transmission within an active aqueduct tunnel is neither feasible nor safe.

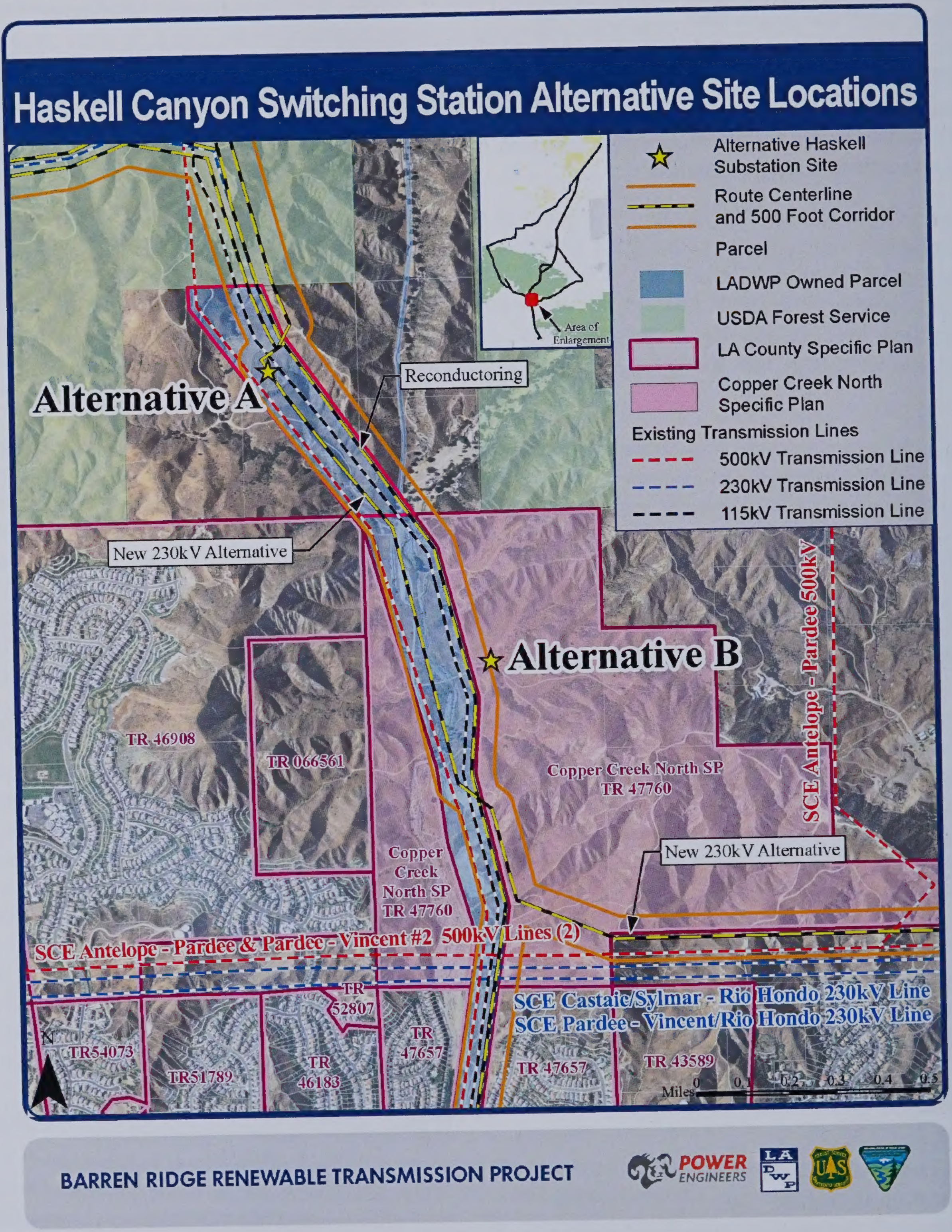
Haskell Canyon Switching Station Site B

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the ANF, on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines. The proposed site is referred to as Site A.

Site B was identified as a possible alternative switching station site, and is north of the city of Santa Clarita, approximately one mile south of Site A. Figure 2-3 illustrates the locations of both sites. LADWP would have to acquire additional property to build Site B.

Site B would be closer to existing and planned residential communities, and would have the potential for greater impacts to visual resources and land use. There is also a very high potential for landslide and liquefaction within this area, and it would therefore not be feasible to construct the switching station at this site.

FIGURE 2-3. HASKELL CANYON SWITCHING STATION ALTERNATIVE SITE LOCATIONS.


Haskell Canyon Switching Station Alternative Site Locations
Alternative Haskell Substation Site
Route Centerline and 500 Foot Corridor
Parcel
LADWP Owned Parcel
USDA Forest Service
LA County Specific Plan
Copper Creek North Specific Plan
Existing Transmission Lines
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line
Area of Enlargement
Alternative A
Reconductoring
New 230kV Alternative
Alternative B
SCE Antelope - Pardee 500kV
TR 46908
TR 066561
Copper Creek North SP
TR 47760
Copper Creek North SP
TR 47760
New 230kV Alternative
SCE Antelope - Pardee & Pardee - Vincent #2 500kV Lines (2)
TR 52807
SCE Castaic/Sylmar - Rio Hondo 230kV Line
SCE Pardee - Vincent/Rio Hondo 230kV Line
N
TR54073
TR51789
TR 46183
TR 47657
TR 47657
TR 43589
Miles
0
0.1
0.2
0.3
0.4
0.5
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LA DWP

2.3.4 SUMMARY OF ALTERNATIVES CONSIDERED AND ELIMINATED

The summary table below lists all alternatives that were considered and eliminated and identifies: 1) the alternative's ability to meet the purpose and need/objectives of the Project; 2) the alternative's potential to avoid or minimize environmental effects; 3) if the alternative is technically and economically feasible; 4) recommendation for analysis in this Final EIS/EIR; and 5) rationale for retention or elimination.

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TABLE 2-2. SUMMARY OF ALTERNATIVES CONSIDERED AND ELIMINATED

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RATIONALE
GENERATION AND TRANSMISSION ALTERNATIVES				
Energy Conservation & Demand-Side Management	No	Yes	Yes	This alternative alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands, meet RPS goals, or achieve greenhouse gas emission reduction.
Distributed Generation & In-Basin Generation Expansion	No	Yes	Yes	This alternative alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands, meet RPS goals, achieve greenhouse gas emission reduction, or increase overall system reliability, nor would it provide delivery of renewable energy at a level and within a timeframe necessary to meet purpose and need/objectives.
Solar Alternative	No	Yes	Yes	This alternative alone, or in combination with other listed generation alternatives, would not meet the electrical energy demands or RPS goals. Additional transmission capacity would still also be required to transfer solar energy from the Mojave Desert area to the Los Angeles Basin.
Accessing Other Renewable Resource Areas	No	No	Yes	This alternative does not meet the purpose and need/objective to deliver renewable energy sources from the Tehachapi Mountains and Mojave Desert areas. LADWP would also not be able to utilize existing facilities that would allow LADWP to store potential renewable energy. The need to access other renewable resource areas would likely involve the need for new transmission lines and therefore this alternative would be expected to have similar impacts to those of the Proposed Action.
DESIGN ALTERNATIVES				
Direct Current Transmission	Yes	No	No	The DC system would meet the purpose and need/objective of the Project to transfer renewable energy, and assist LADWP in meeting RPS goals, greenhouse gas reduction goals, and electrical energy demands. The number of transmission line towers would be minimized and right-of-way expansion reduced. However, large converter stations may increase the potential for impacts to air quality, land use, biological resources, earth resources, water resources, and visual resources. A multi-terminal DC system is technically and economically not feasible and could limit the future interconnections into the system.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RATIONALE
Quad-Circuit Towers	No	Yes	Yes	This alternative would have limited transmission capacity to deliver renewable energy, and would therefore limit LADWP's ability to reduce greenhouse gas emissions, meet RPS goals and electrical demands, and allow interconnection and expansion of renewable energy resources. It would also create greater temporary impacts during construction of the temporary transmission line and removal of the existing BR-RIN.
Alternative Voltages	Yes	No	No	A single-circuit 500 kV transmission line would not be feasible because of the inability to construct a 500/230 kV substation within Haskell Canyon. The need for 500 kV to 230 kV conversions could also limit the number of future renewable energy projects that would interconnect to BRRTP. The increased footprints of the substations also have the potential to increase environmental impacts.
Underground Transmission	Yes	No	No	An underground system would not result in any substantial reduction in environmental effects because it would create new and/or different environmental impacts and is infeasible for long distances.
New Conductor Technology	Yes	No	No	Superconductors are still in the developmental stage and considered infeasible for long distances. Superconductors would result in greater ground disturbance than standard transmission lines and a longer construction duration. They would create a greater potential for impacts to transportation, traffic, soils, and socioeconomics, and archaeological, cultural, biological, and water resources.
Reconductor Existing Transmission Line (No New Transmission Line)	No	Yes	Yes	With this alternative, transfer capacity of the utility corridor from Barren Ridge to the proposed Haskell Canyon Switching Station would be constrained, thereby limiting delivery of renewable energy, ability to meet future electrical demands, RPS goals, and greenhouse gas reduction goals, and interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas. The construction of a temporary transmission line would not minimize or avoid impacts to environmental resources; however, the permanent impacts of this alternative would be less than that of the Proposed Action.
New 230 kV Transmission Line (No Reconductoring)	No	Yes	Yes	This alternative would allow LADWP to access renewable resources in the Tehachapi Mountains and Mojave Desert areas, but LADWP's ability to meet projected electrical energy demands would be limited.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RATIONALE
ROUTING ALTERNATIVES				
Midway to Vincent Corridor	Yes	No	Yes	The Midway to Vincent Corridor would not significantly reduce or avoid impacts to land use, cultural, biological, and visual resources, or avoid geological hazards. The Midway to Vincent Corridor is much longer than the Proposed Action, and thus could potentially lead to more geographically extensive impacts. The increased length, steep topography, and limited existing access roads for construction could make the Midway to Vincent sub-route more difficult and costly to build in comparison to the Proposed Action.
Bouquet Canyon Alternative (Segment H, including 110th & 115th Street Modifications)	Yes	No	Yes	Ground disturbance and visual impacts would be minimized through the use of helicopter construction; however, impacts to air quality and noise would increase. Helicopter construction also poses construction and safety concerns that are not present for the Proposed Action or other routing segments. Cumulative effects for the Project would also increase because of the further disturbance of revegetated and rehabilitated areas and potential for impacts from three transmission line projects in the same vicinity.
Antelope Valley Alternative (Segments C and E)	Yes	No	Yes	The Antelope Valley Alternative would avoid impacts to residences close to the Proposed Action's Segment B, but would create a new transmission corridor and increase the potential for impacts to visual resources, biological resources, water resources, air quality, and cultural resources. This alternative would also require more new access roads and improvements to the existing access roads. *RETENTION of SEGMENT C.* Although Segment C would require the creation of a new utility corridor and the construction and improvement of access roads, and has the potential to increase impacts to air quality, biological resources, cultural resources, visual resources, and water resources, it is retained for further study to allow Segment D a northern connection to the Barren Ridge Switching Station. *ELIMINATION of SEGMENT E.* Segment E would require an additional 6.5 miles in comparison to the proposed Project and would not significantly reduce or avoid impacts to air quality or biological, cultural, visual, and water resources.
Elizabeth Lake Tunnel	Yes	No	No	The Elizabeth Lake Tunnel alternative is infeasible, and this alternative would not significantly reduce or avoid impacts to air quality, or biological, cultural, land use, and water resources.

ALTERNATIVES	MEETS PURPOSE & NEED	POTENTIAL TO AVOID OR MINIMIZE ENVIRONMENTAL EFFECTS	FEASIBILITY	RATIONALE
Haskell Canyon Switching Station Site B	Yes	No	No	Site B has the potential for greater impacts to visual resources and land use, because it is closer to existing and planned residential communities than Site A. Site B also has a greater potential for landslide and liquefaction and it may not be feasible to construct the switching station at this site.

2.3.5 NEW ALTERNATIVES CONSIDERED IN RESPONSE TO COMMENTS ON THE DRAFT EIS/EIR

Three-Circuit Towers

In response to a comment received on the Draft EIS/EIR, a new three-circuit alternative has been evaluated in this Final EIS/EIR. Similar to the Quad-Circuit Alternative described above, LADWP considered the use of three-circuit towers along the existing BR-RIN corridor instead of the proposed double-circuit tower and existing single-circuit BR-RIN towers. Layout would be similar to that described for the quad-circuit towers, with the exception that there would be no vacant position available for a possible future circuit.

This alternative would require less permanent rights-of-way and minimize permanent impacts to land use and visual resources and to USFS- and BLM-managed lands. Utilizing three-circuit structures exclusively would not meet the purpose and need/objective to increase LADWP's system reliability and flexibility, increase delivery of renewable energy, or meet future electrical demands. Because of reduced system reliability, WECC regulations would limit the transfer capacity of the three-circuit structures, therefore limiting the amount of renewable energy that would be transmitted in comparison to the Proposed Action. LADWP's ability to reduce greenhouse gas emissions, to meet RPS goals, and to interconnect and expand renewable energy resources would all be decreased. Greater temporary impacts would result from constructing the large three-circuit towers and removing the existing BR-RIN. Because this alternative would not meet the basic project purpose and need, it is eliminated from further evaluation in the Final EIS/EIR.

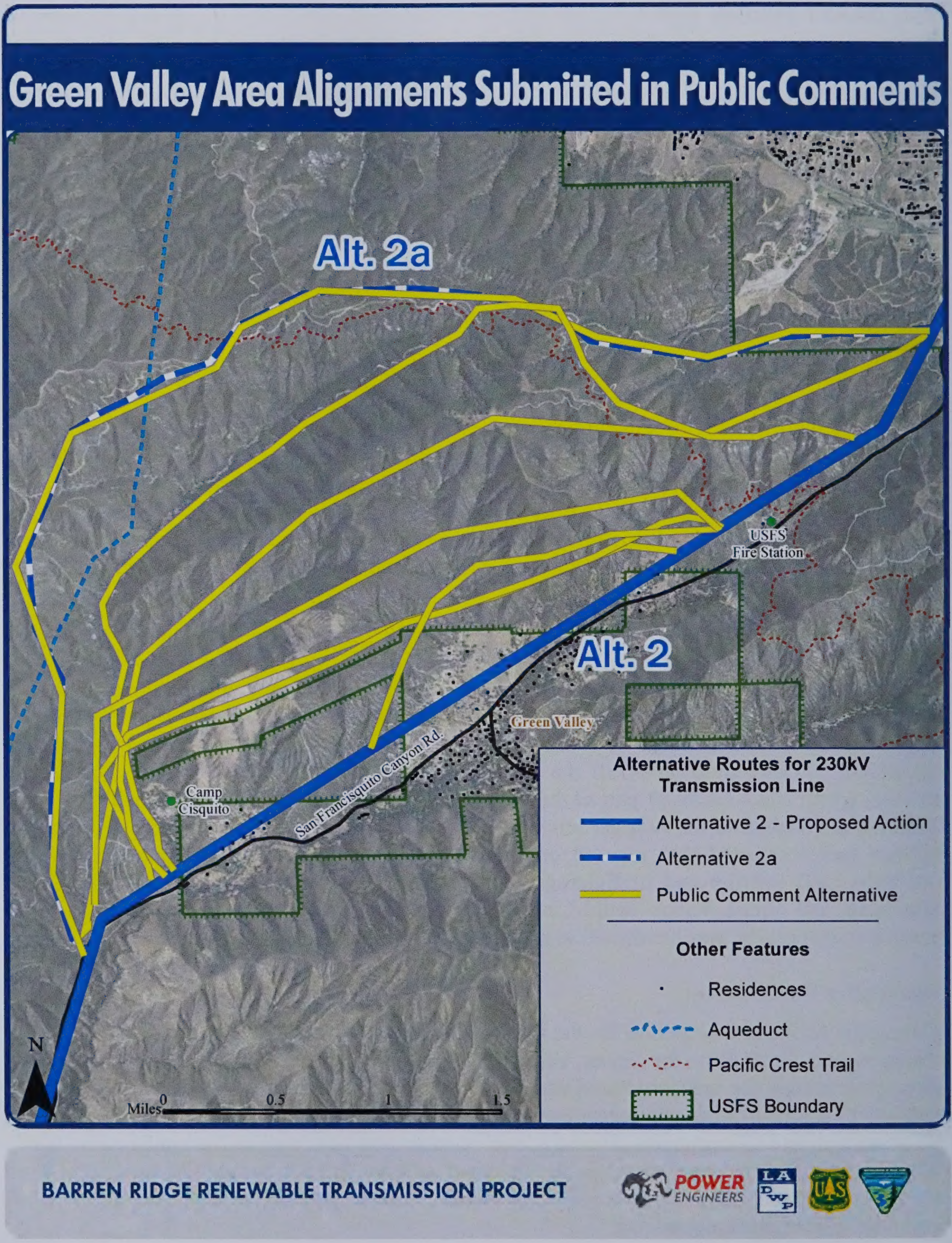
Green Valley Multi-Line Relocation Alternative

In response to comments received from residents of the unincorporated community of Green Valley on the Draft EIS/EIR, the lead agencies investigated a variety of new alignments in the Green Valley area to relocate both the existing and proposed transmission lines around this community. The relocation of all the existing lines would include the 500 kV Pacific DC Intertie, which is not currently part of the Proposed Action or Alternatives, and would constitute a substantial change to the original scope of the Project. An initial investigation of alignment options was conducted that focused on transmission line constructability, transmission line reliability, and wildfire and firefighting effectiveness. This initial effort resulted in a single alignment, the Green Valley Multi-Line Relocation Alternative, for which a more detailed environmental review was conducted as described in this Final EIS/EIR.

Alternative Development

During the public review period for the Draft EIS/EIR, a total of 51 sets of comments (48 from residents and three from the Green Valley Town Council) were received referencing a new alternative around the unincorporated community of Green Valley (see Appendix R of this Final EIS/EIR). A total of three comments favored moving all transmission lines along the Alternative 2a alignment, and 47 comments favored a local re-route onto the Angeles National Forest (ANF). Nine comments (eight received at public meetings and one letter from the Green Valley Town Council) included maps of re-route suggestions. See Figure 2.3-1 for a compilation of community-submitted alignments.

FIGURE 2.3-1. GREEN VALLEY AREA ALIGNMENTS SUBMITTED IN PUBLIC COMMENTS


Green Valley Area Alignments Submitted in Public Comments
Alt. 2a
Alt. 2
USFS Fire Station
Green Valley
Camp Cisquito
San Francisquito Canyon Rd.
N
Miles 0 0.5 1 1.5
Alternative Routes for 230kV Transmission Line
Alternative 2 - Proposed Action
Alternative 2a
Public Comment Alternative
Other Features
Residences
Aqueduct
Pacific Crest Trail
USFS Boundary
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Public meeting comments on the Draft EIS/EIR included eight comments (six from individual residents and two from the Green Valley Town Council president) regarding an alternative around the unincorporated community of Green Valley. Increased fire risk, transmission line noise, and visual blight were the primary justifications mentioned. Of those eight public meeting comments, one comment was in favor of moving all transmission lines to the Alternative 2a alignment, five comments were in favor of a local re-route onto the ANF, and one comment supported both relocation options.

A comment letter with map was received from the Green Valley Town Council that suggested a similar new alternative around Green Valley and onto the ANF. Reasons for supporting the re-route included to increase firefighting ability and to avoid creating a transmission line-bounded island (i.e., indefensible firefighting space between transmission lines). The Proposed Action (Alternative 2), as presented in this Final EIS/EIR, does not create a transmission line-bounded island.

Forty-two comment letters were also received from individual residents regarding a new alternative around Green Valley. One letter was in favor of moving all transmission lines (existing and those proposed as part of BRRTP) along the Alternative 2a alignment, and 40 letters were in favor of a local re-route onto the ANF; one letter did not emphasize a specific preference. The primary support for a re-route was again based on the interest in increased firefighting ability and reduction of impacts to private property.

Preliminary Feasibility Analysis

Based on the comments received, LADWP completed an engineering evaluation for relocating the existing and proposed transmission lines around the Green Valley area. Starting from two additional alignments submitted by the Green Valley Town Council, LADWP identified two alignments that would meet engineering and constructability needs while preserving the intent of the community-submitted alignments. Figure 2.3-2 illustrates these initial alignments studied. Of these four alignments, two (Alignments B and C) were determined to be infeasible due to terrain limitations (Boyles 2011). Additionally, Alignment D was determined to be infeasible from a firefighting standpoint due to its placement on a ridge top (POWER 2012a). Ridge tops are traditionally critical firefighting points, and fire breaks are often created on ridge tops.

The remaining alignment was determined to be feasible from a construction and engineering standpoint, and this alignment was then further developed into a proposed Green Valley Multi-Line Relocation Alternative (see Figure 2.3-3). This alternative was developed as the single feasible alternative to meet the purpose and intent of the community-submitted alignments. To assist in the detailed analysis of the alignment, preliminary tower locations were mapped by an LADWP engineer. This information was provided to LADWP's environmental contractor, POWER Engineers, Inc., whose staff added potential locations of roads based on terrain (POWER 2012b).

FIGURE 2.3-2. GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE DEVELOPMENT

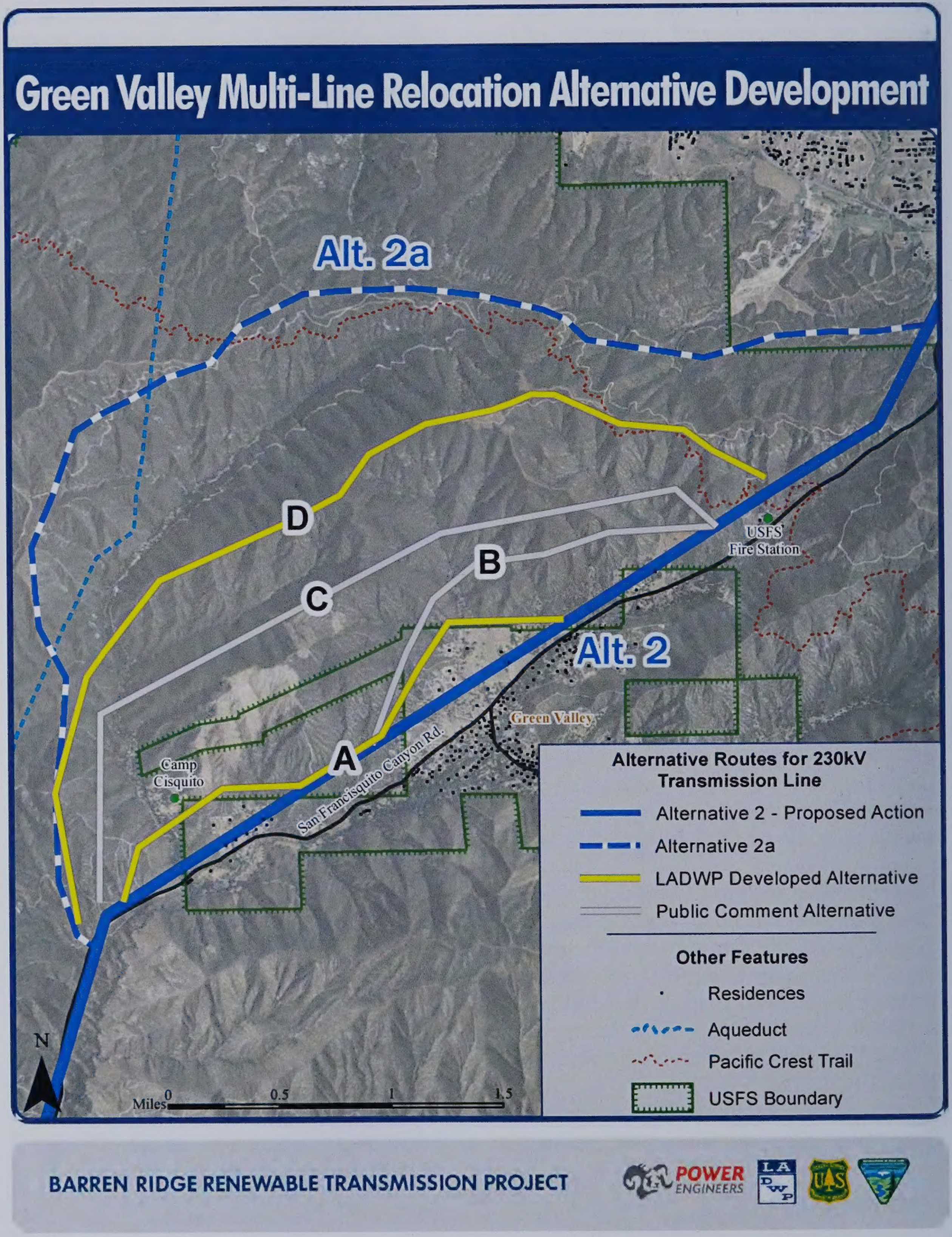
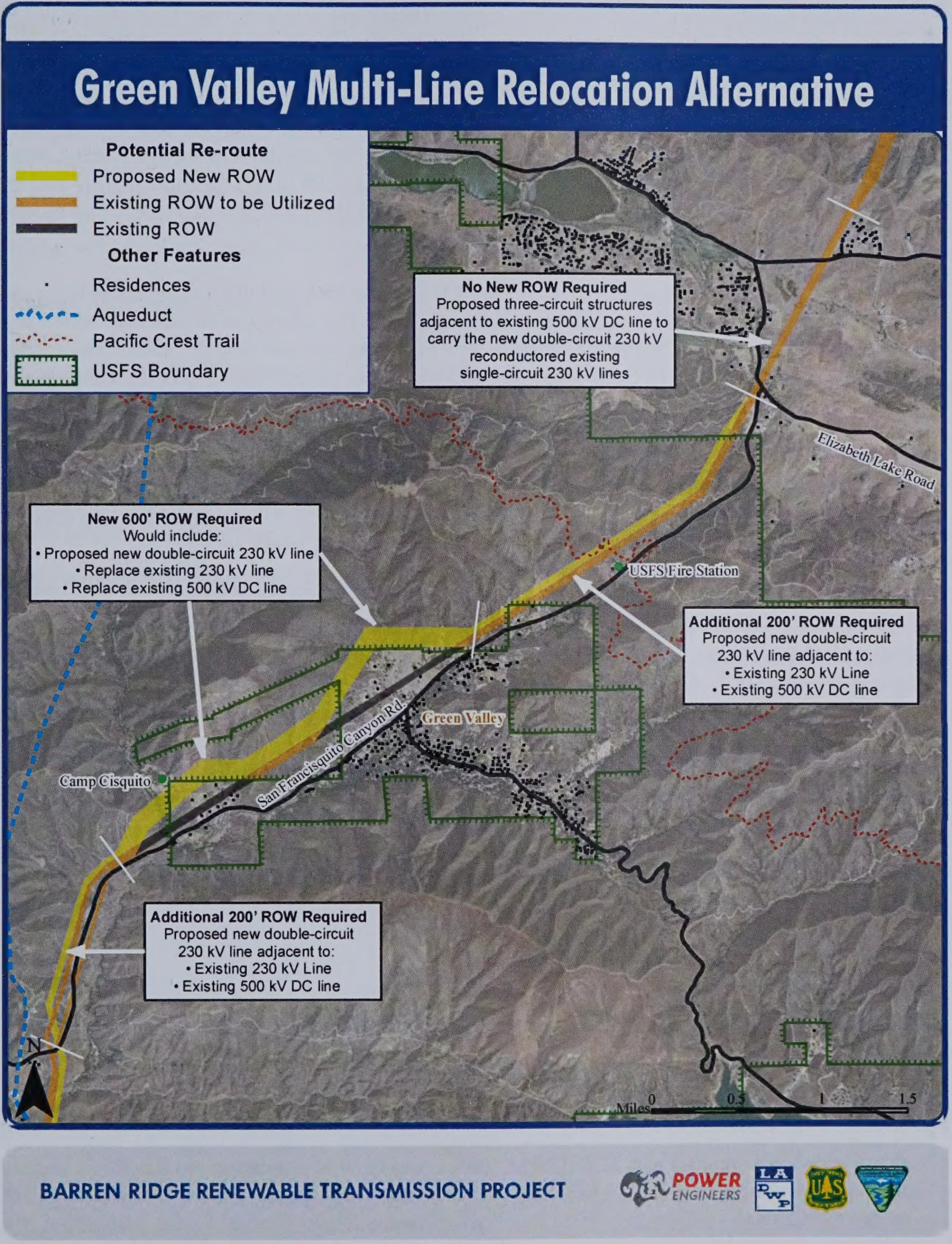

Green Valley Multi-Line Relocation Alternative Development
Alt. 2a
D
C
B
A
Alt. 2
USFS Fire Station
Green Valley
Camp Cisquito
San Francisquito Canyon Rd.
N
Miles 0 0.5 1 1.5
Alternative Routes for 230kV Transmission Line
Alternative 2 - Proposed Action
Alternative 2a
LADWP Developed Alternative
Public Comment Alternative
Other Features
Residences
Aqueduct
Pacific Crest Trail
USFS Boundary
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

FIGURE 2.3-3. GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE


Green Valley Multi-Line Relocation Alternative
Potential Re-route
Proposed New ROW
Existing ROW to be Utilized
Existing ROW
Other Features
Residences
Aqueduct
Pacific Crest Trail
USFS Boundary
No New ROW Required
Proposed three-circuit structures adjacent to existing 500 kV DC line to carry the new double-circuit 230 kV reconductored existing single-circuit 230 kV lines
Elizabeth Lake Road
New 600' ROW Required
Would include:
• Proposed new double-circuit 230 kV line
• Replace existing 230 kV line
• Replace existing 500 kV DC line
USFS Fire Station
Additional 200' ROW Required
Proposed new double-circuit 230 kV line adjacent to:
• Existing 230 kV Line
• Existing 500 kV DC line
Green Valley
San Francisquito Canyon Rd.
Camp Cisquito
Additional 200' ROW Required
Proposed new double-circuit 230 kV line adjacent to:
• Existing 230 kV Line
• Existing 500 kV DC line
N
Miles
0
0.5
1
1.5
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Alternative Description

The proposed Green Valley Multi-Line Relocation Alternative would deviate from the Proposed Action by relocating the existing (one single circuit AC and one single circuit DC line) and proposed transmission lines to a new alignment that is northwest of the existing LADWP ROW. This new alignment is generally along the boundary of the private and public lands within the general area of Green Valley. The proposed Green Valley Multi-Line Relocation Alternative would also differ from the Proposed Action by reducing the application of the Three-Circuit Tower Mitigation as described in Section 2.4.2 of this Final EIS/EIR (see Figure 2.3-3) and by locating a portion of the Alternative outside of existing LADWP ROW. More specifically, the alternative would differ from the Proposed Action by:

- Relocating 2.4 miles of the existing 500 kV (Pacific DC Intertie) transmission line onto 2.8 miles of new single-circuit steel lattice towers. The alteration of this line, which is a high-voltage direct current transmission line that carries energy from the Pacific Northwest to Southern California, was not previously part of the Proposed Action or any Alternative;
- Relocating 2.4 miles of the existing single-circuit 230 kV transmission line (Barren Ridge-Rinaldi), proposed to be reconductored as part of the Proposed Action, onto 2.8 miles of new single-circuit steel lattice towers;
- Locating 2.4 miles of the proposed new double-circuit 230 kV transmission line (Barren Ridge-Haskell) onto 2.8 miles of new double-circuit steel lattice towers; and
- Reducing the need for and use of the Three-Circuit Tower Mitigation by 5.6 miles within Green Valley.

The Green Valley Multi-Line Relocation Alternative would require a utility corridor 2.8 miles long and approximately 600 feet wide for the proposed new double-circuit transmission line and the relocation of the two existing transmission lines. Approximately 2.4 miles of each existing transmission line would be moved from their current location. In areas where existing transmission lines would be relocated outside of LADWP's existing 250-foot ROW, the existing transmission conductors and structures would be removed, and disturbance areas within the existing ROW would be rehabilitated. LADWP would maintain ownership of the existing ROW. Additionally, two new sections of 200-foot-wide corridor, 2.2 miles and 1.0 mile long, would be required adjacent to the two existing transmission lines just southwest and just northeast of the community of Green Valley where the application of the Three-Circuit Tower Mitigation would no longer be utilized.

Three-Circuit Tower Mitigation and Helicopter Construction

This Alternative would amend the proposed Three-Circuit Tower Mitigation, described in Section 2.4.3 of this Final EIS/EIR, which was developed primarily to avoid the displacement of private residences. The amended Three-Circuit Tower Mitigation would be applied only between mile markers 27.1 and 27.6 (Willow Springs area) and between mile markers 44.6 and 46.0 (Elizabeth Lake area). Three-Circuit Tower Mitigation would no longer be implemented between mile markers 46.0 and 51.6 (Green Valley area). This mitigation would not be needed in the Green Valley area with this alternative because the expansion of the ROW would not be expected to displace residences. With this change to the Three-Circuit Tower Mitigation, the installation of a temporary line during construction would not be required within this area.

Helicopter construction, as described in Section 2.4.4 in this Final EIS/EIR, would apply to the portion of this proposal on National Forest System (NFS) lands in areas more than 300 feet from existing roads and with slopes generally greater than 25 percent. Helicopter construction would allow the transmission towers to be installed by helicopter, eliminating the need for new access roads to tower sites. An estimated six new access roads, none longer than approximately 225 feet in length, would be constructed to provide access to the relocated transmission towers while four new towers could be accessed by existing roads. The remaining towers, an estimated 39 of the 49 new towers, would not be accessible by roads and would utilize helicopter construction. Pulling and tensioning sites and access roads to them would be required during construction. Pulling and tensioning sites would be rehabilitated following construction.

Meeting the Purpose and Need

The Green Valley Multi-Line Relocation Alternative would meet the Proposed Action's basic purpose and need. It would enable the delivery of renewable energy resources, reduce greenhouse gas emissions, assist LADWP in meeting its RPS goals and electrical energy demands, allow for interconnection and expansion of renewable energy in the Tehachapi Mountains and Mojave Desert areas, and maximize the accommodation of future utility needs. However, by increasing the ROW required within the ANF and deviating from designated corridors, this alternative would lessen the ability to meet the USFS' purpose of minimizing effects of utility corridors on federally managed lands, in comparison to the Proposed Action.

Potential to Avoid and Minimize Environmental Effects

While the Green Valley Multi-Line Relocation Alternative would avoid or minimize direct environmental impacts to some residents of the Green Valley area, it would not avoid or minimize overall environmental effects compared to the Proposed Action. See Table 2.3-1 for a summary of specifications for the Green Valley Multi-Line Relocation Alternative, assuming a 600-foot ROW, compared to the Proposed Action in the same area. See Figures 2.3-4 through 2.3-8 for current views of the Green Valley Multi-Line Relocation area and photo simulations of the views with implementation of the Proposed Action and this alternative.

TABLE 2.3-1. SPECIFICATIONS OF THE GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE AND THE CORRESPONDING SEGMENT OF THE PROPOSED ACTION

Specification	Green Valley Multi-Line Relocation Alternative		Corresponding Proposed Action Segment
	600 ft. ROW	200 ft. ROW	Existing ROW
Total mileage length	2.8	3.2	5.8
Total acres on NFS land (additional new ROW)	150.1	77.6	None
Total acres on private land (additional new ROW)	31.0	5.3	None
No. of homes/structures w/in 500 ft.	6 (4 of which are within 500 ft of both alternatives)	9 (9 of which are within 500 ft of both alternatives)	32 (13 of which are within 500 ft of both alternatives)

Specification	Green Valley Multi-Line Relocation Alternative				Corresponding Proposed Action Segment
	600 ft. ROW			200 ft. ROW	Existing ROW
Number of newly affected parcels of private land	9			4	0
Mileage on NFS land outside of existing USFS designated utility corridor	Pacific DC	Existing 230kV AC	New 230kV AC	None	None
	2.2	1.3	1.9		

The Proposed Action (which is identified as the Federal Agency Preferred Alternative and Environmentally Superior Alternative in Sections 2.7 and 2.8 in this Final EIS/EIR) would not require new ROW within the Green Valley area. However, the Green Valley Multi-Line Relocation Alternative would require new ROW on private property, including residential parcels, and new easement on NFS lands. Acquisition of approximately 36 acres of private land impacting 13 individual parcels would be required by this alternative, and approximately 228 acres of NFS lands would be encumbered by easements under this alternative. This Alternative would move the proposed and existing lines farther from most of the 32 residents within 500 feet of the existing ROW. While 13 of these residences would be within 500 feet of the Green Valley Multi-Line Relocation Alternative ROW, 19 of these residences would no longer be within 500 feet of a transmission line ROW. The Green Valley Multi-Line Relocation Alternative ROW would be within 500 feet of a fewer number of residences than the Proposed Action, with a total of 14 residences that would be within 500 feet of the ROW. Of these, there would be one residence that would not have previously been within 500 feet of a transmission line ROW. An existing private facility on NFS land, Camp Cisquito—operating under a USFS Special Use Permit—that was not previously within 500 feet of a transmission line ROW would also be within 500 feet of the Green Valley Multi-Line Relocation Alternative ROW.

FIGURE 2.3-4. KEY OBSERVATION POINTS FOR THE GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE

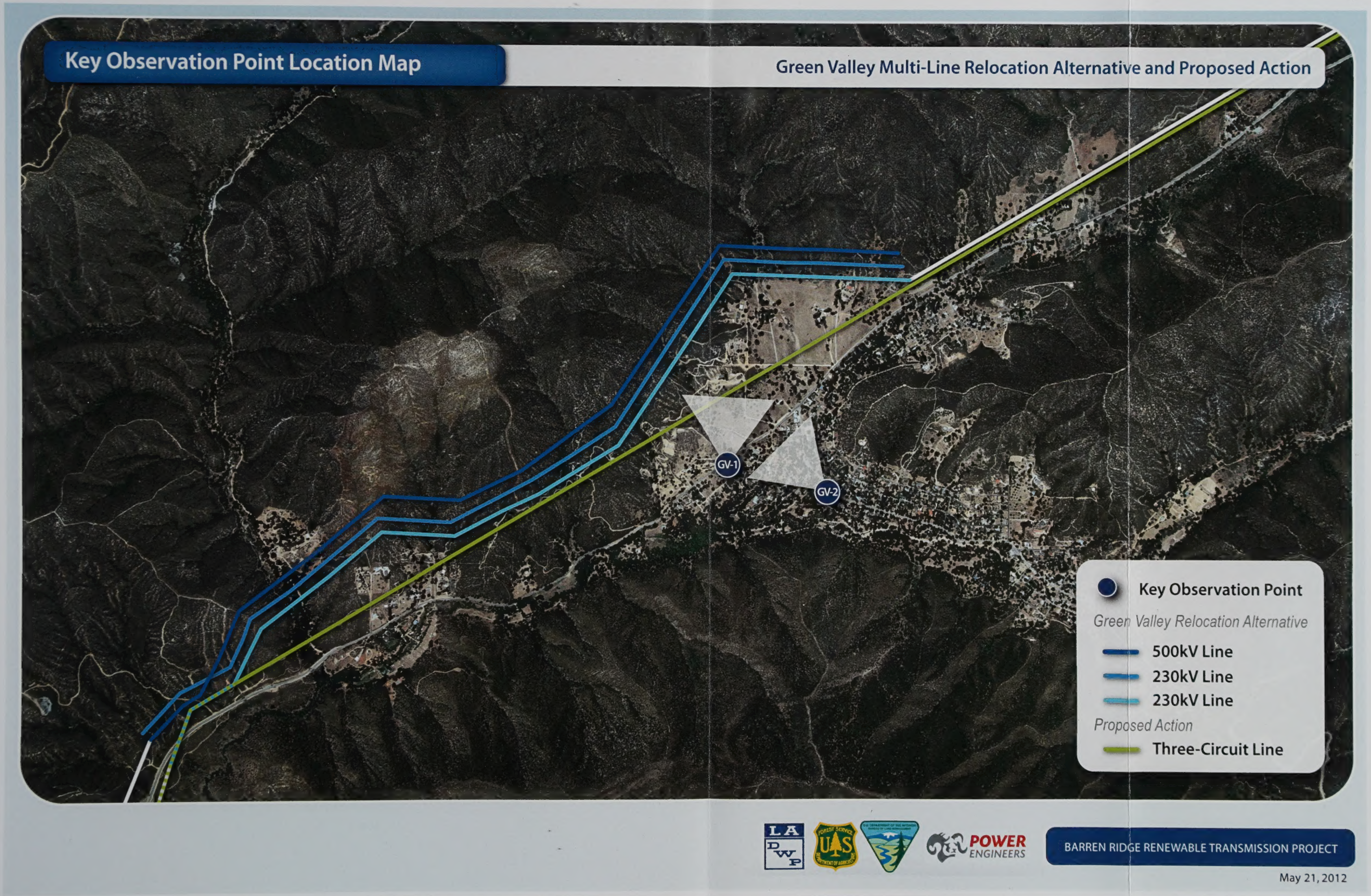
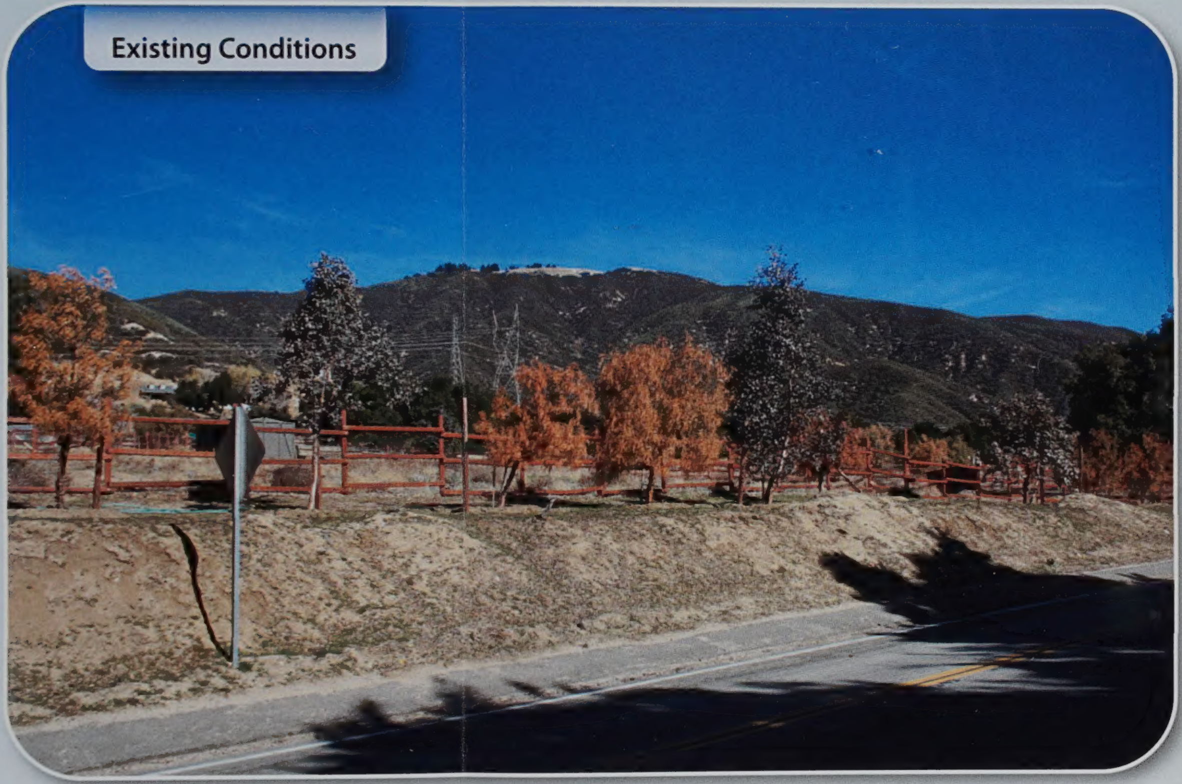

Key Observation Point Location Map
Green Valley Multi-Line Relocation Alternative and Proposed Action
GV-1
GV-2
Key Observation Point
Green Valley Relocation Alternative
500kV Line
230kV Line
230kV Line
Proposed Action
Three-Circuit Line
LA DWP
POWER ENGINEERS
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
May 21, 2012

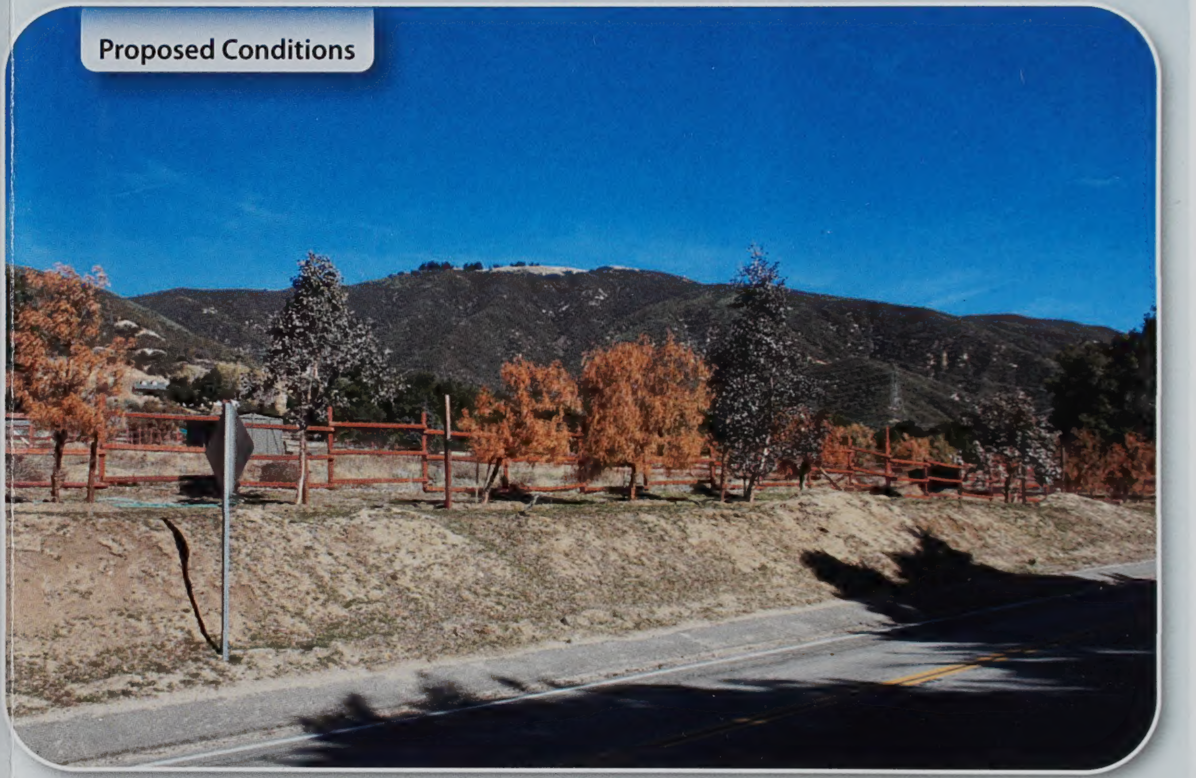
FIGURE 2.3-5. KEY OBSERVATION POINT 1: GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

GV-1

Green Valley Multi-Line Relocation Alternative


Existing Conditions


Proposed Conditions

DATE:	12/30/2008
TIME:	10:13 AM
VIEW LOOKING:	NORTH

POWER ENGINEERS

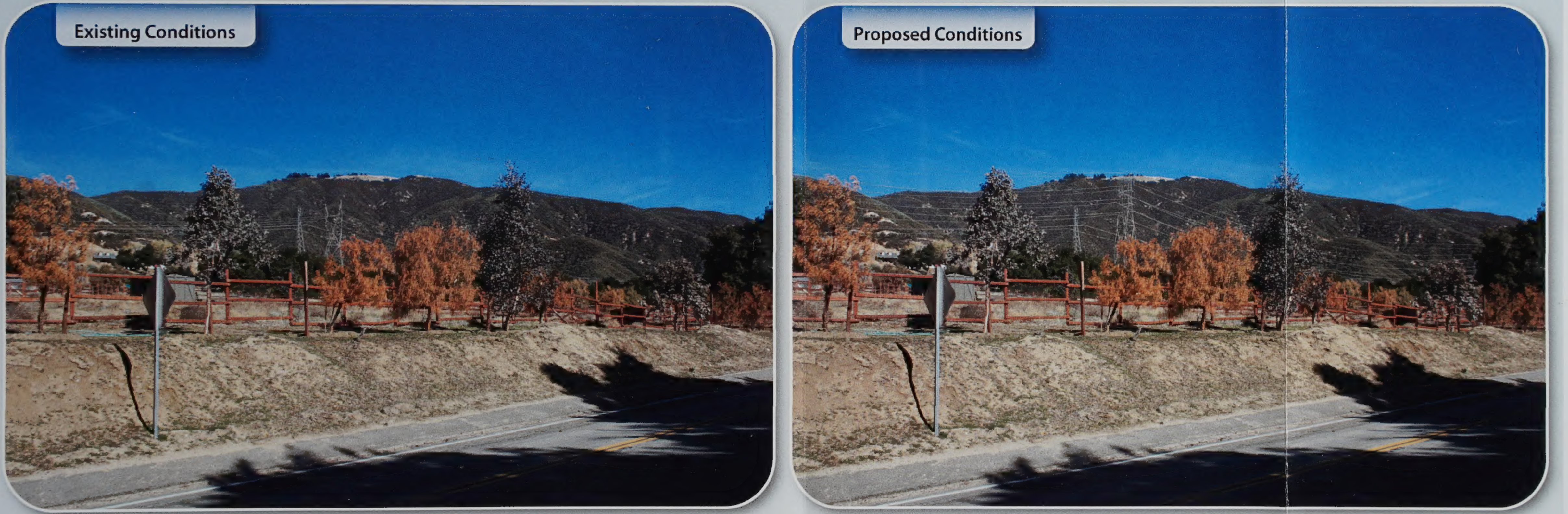
May 21, 2012

FIGURE 2.3-6. KEY OBSERVATION POINT 1: PROPOSED ACTION

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

GV-1

Proposed Action



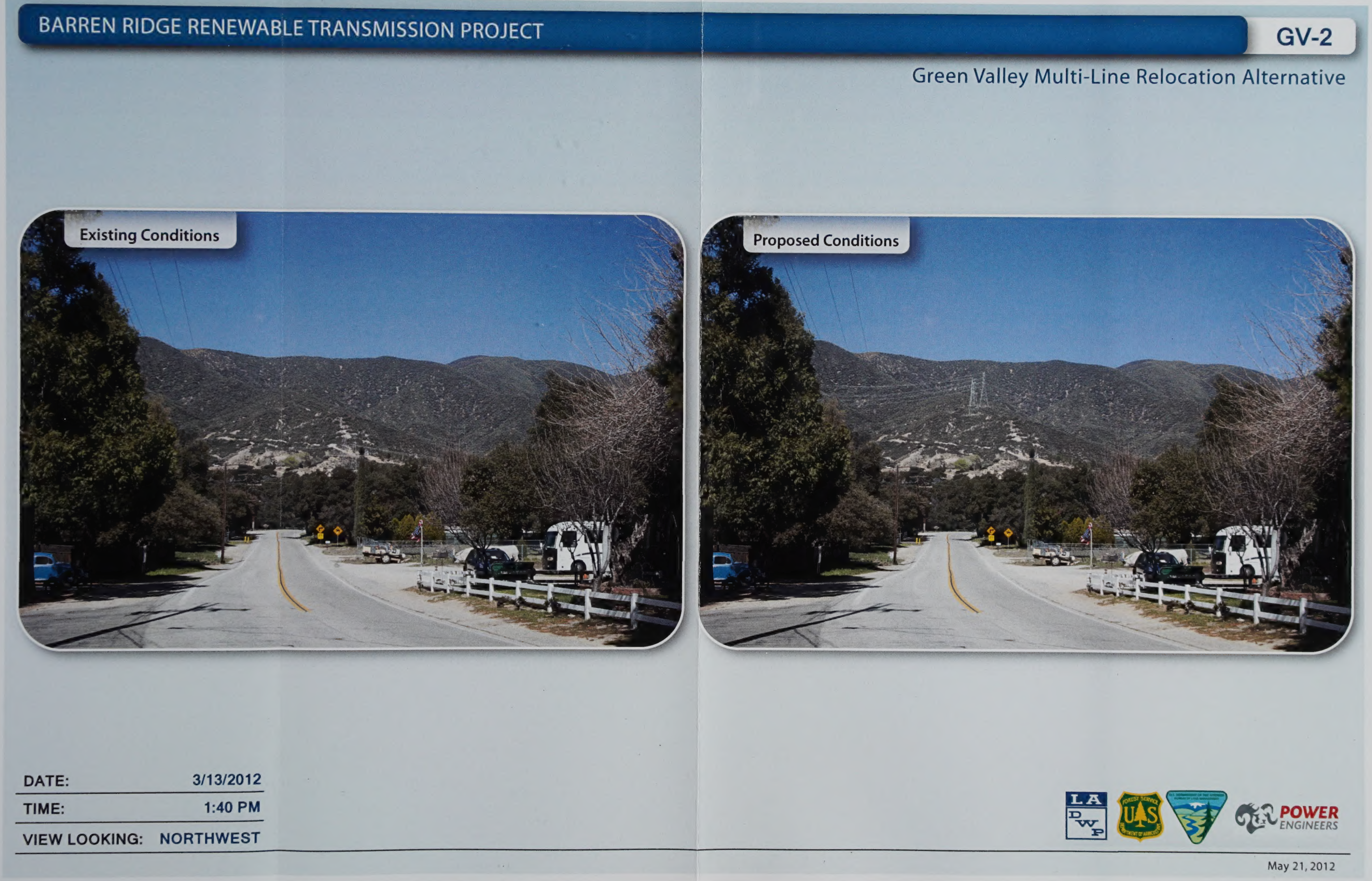
Existing Conditions

Proposed Conditions

DATE:	12/30/2008
TIME:	10:13 AM
VIEW LOOKING:	NORTH

May 21, 2012

FIGURE 2.3-7. KEY OBSERVATION POINT 2: GREEN VALLEY MULTI-LINE RELOCATION ALTERNATIVE


BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
GV-2
Green Valley Multi-Line Relocation Alternative
Existing Conditions
Proposed Conditions
LA DWP
POWER ENGINEERS
May 21, 2012

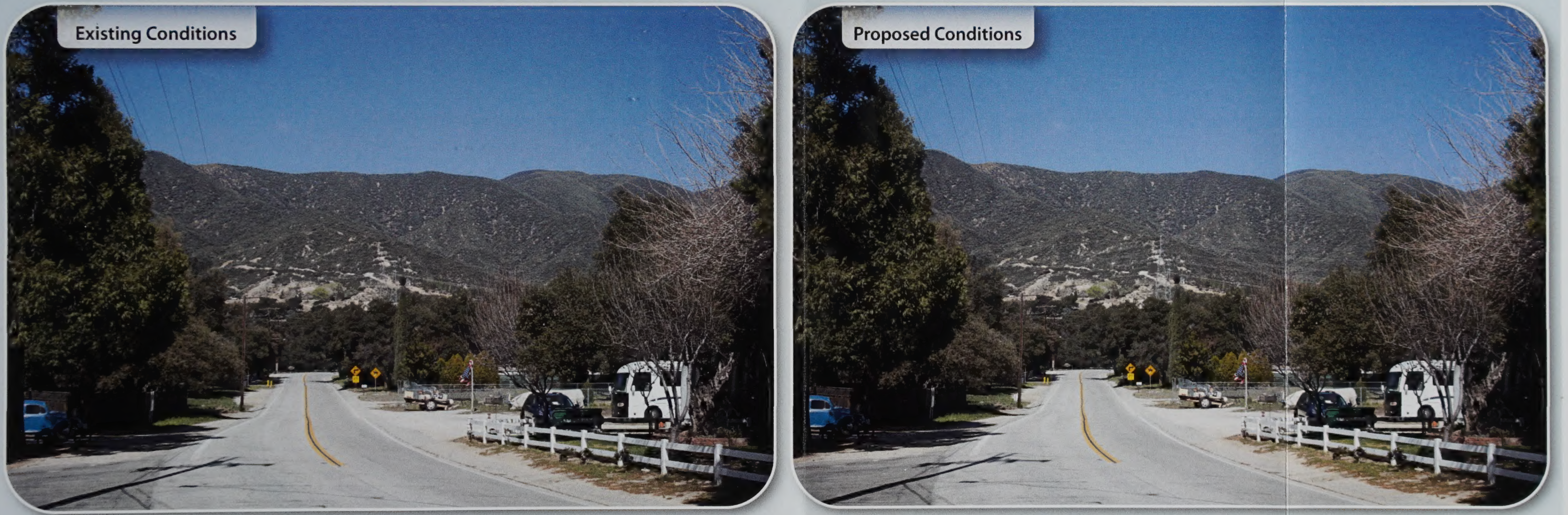
DATE: 3/13/2012
TIME: 1:40 PM
VIEW LOOKING: NORTHWEST

FIGURE 2.3-8. KEY OBSERVATION POINT 2: PROPOSED ACTION

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

GV-2

Proposed Action


Existing Conditions
Proposed Conditions

DATE: 3/13/2012

TIME: 1:40 PM

VIEW LOOKING: NORTHWEST

May 21, 2012

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Land Use Plan Consistency

The relocated transmission lines would fall outside of the designated utility corridor for a distance of 5.4 miles (three segments of 2.2, 1.3, and 1.9 miles) for each of the three relocated lines. This corridor is designated in both the 2005 ANF Land Management Plan (LMP) and in the Record of Decision (ROD) for the West-Wide Energy Corridor Programmatic EIS prepared pursuant to Section 368 of the Energy Policy Act of 2005. Authorization for placement of this alternative outside of the utility corridor designated by the LMP would not contribute towards meeting the desired conditions in the LMP (LMP, Part 2, p 121; Part 3, Goal 4.2, p. 59. The Proposed Action is entirely within the LMP designated corridor and the corridor identified in the West-Wide Energy Corridor Programmatic EIS.

Land Use impacts and inconsistency with the LMP would be further increased with this Alternative in comparison to the Proposed Action due to additional acreage on NFS lands, where the LMP requires projects to meet Scenic Integrity Objectives (SIOs) (LMP, Part 3, Standard S-10, p. 6). Additional areas of National Forest lands would not meet these SIOs, which would require a greater level of plan amendment to the LMP. SIOs are established through the LMP for NFS lands, and do not apply to private lands.

Wildfire and Fuels

Because improvements to fire safety were cited by the commenters as a primary reason for community support of the Green Valley Multi-Line Relocation Alternative, a focused analysis of this Alternative's ability to avoid or minimize wildfire was completed. In-person meetings were conducted by the project team with USFS, including the ANF Forest Supervisor, Fire Management Officer, and staff, on January 13, 2012 (POWER 2012c) and with Los Angeles County Fire Department staff on February 2, 2012 (POWER 2012d). The purpose of these meetings was to introduce the new Alternative to the local firefighting agencies and to gather preliminary feedback on potential impacts relating to wildfires and firefighting. Additionally, an analysis of the three wildfire and fuels impacts that were identified as part of the fireshed assessment in this Final EIS/EIR was undertaken. The three impacts analyzed are:

> *Impact F-1*: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.
>
> *Impact F-2*: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.
>
> *Impact F-3*: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

The four alternatives considered in the Final EIS/EIR evaluated the same criteria that were evaluated for the Green Valley Multi-Line Relocation Alternative.

Impact F-1

This Alternative would not improve the overall effectiveness of firefighting in the area and could compromise firefighter safety and create new obstructions to fire suppression efforts. The steep hillsides on the ANF where the transmission lines in this Alternative would deviate from the Proposed Action alignment are considered a key area for firefighting activities; this border between the community of Green Valley and the ANF is important for firefighting to both protect the community from fire moving southward from the forest, as may occur during high wind events, and to protect the forest from fires moving northward from the community, as may occur from an ignition originating in a populated area (POWER 2012c).

This Alternative would create new obstructions in this critical transition zone between public and private properties, which is an area where ground and hose laying tactics are typically performed, and these tactics are discouraged for safety reasons within 100 feet of the power lines (NWCG 2010). The ability of firefighters to directly attack fires approaching the community would be diminished. However, some new roads proposed with this Alternative would provide some additional firefighter vehicular access to the area.

The three-circuit towers that would be constructed (Proposed Action) in Green Valley would be an average of 60 feet taller, but because of their location in the same place as the existing lines, would pose a minimal change to aerial firefighting ability. However, the wider ROW for the three sets of towers for this Alternative would be moved from the valley floor to the hillsides surrounding the community. Aerial tanker fire-suppression drops along the interface between the community of Green Valley and USFS land would be more hazardous due to the creation of a new physical obstacle along the hillside and perpendicular to the primary topographic ridges. The effect of this would be that the application of aerial fire retardant may be limited in areas (POWER 2012d). It would also make night flying along the interface zone more hazardous due to the creation of a new physical obstacle in an area that is currently open.

Compared to this Alternative, the Proposed Action would better allow aerial firefighting resources to operate safely with fewer aerial hazards while providing protection to the residents of Green Valley and surrounding area (Osby 2011).

Impact F-2
The Green Valley Multi-Line Relocation Alternative would not decrease the risk of a wildfire event as compared to the Proposed Action. Construction activities related to a transmission line are factors increasing the potential for wildfire events due to the potential of wildfire ignitions. Although the presence of a high voltage transmission line has a low likelihood to cause a fire directly, this Alternative would require one additional set of transmission structures within the Green Valley area as compared to the Proposed Action. This Alternative would locate the lines over greater acreage of fire-prone chaparral as compared to the Proposed Action. Fuels along the existing ROW, on the valley floor, are generally grassy types, and typically would not result in as intense of fires as the heavier brush on the hillsides.

Additionally, through introduction of new roads, although they would not be open to the public and would be limited in extent due to the use of helicopter construction, the potential for accidental or intentional ignition by the public would be increased.

Impact F-3
Additionally, this Alternative would not decrease wildfire ignition potential as compared to the Proposed Action. Activities associated with the construction and/or maintenance of this

Alternative may result in increased native vegetation alteration, which may increase the potential for wildfire due to the introduction of fire-prone weeds. Increased native vegetation alteration would be expected from locating this Alternative within open space and largely intact habitat, in comparison to the Proposed Action, which would be located within an existing utility corridor.

Visual Resources

In comparison to the Proposed Action, the Green Valley Multi-Line Relocation Alternative would cause increased impacts to some viewers, while reducing impacts to others. Overall, impacts would be reduced for a higher number of viewers using San Francisquito Canyon Road and residences located near the existing corridor. However, impacts would be increased for some residences and dispersed recreationists due to the elevated position in the landscape, obstruction of views, and increased skylining of structures in some areas. Increased visual impacts are expected with the Green Valley Multi-Line Relocation Alternative due to the contrasts of a new transmission corridor, primarily within the ANF, where no roads, structures, or lines currently exist.

Visual impacts would be primarily related to the overall visibility (opportunity for viewing) of the transmission line structures. Landform and vegetation contrasts would be minimized due to the utilization of helicopters during construction in most areas to avoid road building. Some long-term landform and vegetation contrasts would remain around structure bases that would generally be more visible than those of the Proposed Action's due to the Green Valley Multi-Line Relocation Alternative's elevated position in the landscape. Although this alternative would be seen against a vegetated backdrop that would allow for visual blending with the landscape, the opportunity for viewing structures would be increased due to their elevated position on the mountain slope. Application of mitigation to darken the structures may help blend these structures into the landscape, but such mitigation would also increase contrasts when viewed against the sky.

Within the ANF, the Green Valley Multi-Line Relocation Alternative would increase the acreage of "High" Scenic Integrity Objective (SIO) zones impacted by the Project compared to the Proposed Action. While the Proposed Action would be located entirely within a federally designated utility corridor on the ANF, this alternative would be located outside of a federally designated utility corridor on the ANF. Greater impacts related to non-compliance with SIOs would result due to anticipated reduction of Scenic Integrity levels along a longer distance than would result from the Proposed Action. Scenic Integrity levels would typically be substantially reduced as a result of the presence of structures and their proximity to High Concern viewers (see Table 15 of the Visual Resources Technical Report in Volume III of this Final EIS/EIR). The reduction of Scenic Integrity levels would necessitate a Project-specific plan amendment along the new corridor due to proximity to High Concern viewpoints and because the Green Valley Multi-Line Relocation Alternative would be located within the foreground, immediate foreground, and middleground distance zones from these viewpoints. These impacts could be mitigated by requiring restoration or compensation for landscape character and visual quality impacts on the ANF. This alternative would not, however, substantially affect the Project's overall reduction of Scenic Integrity compared to the Proposed Action because Project compliance with SIOs would only occur at long distances (background and seldom seen distance zone) and due to the current High and Moderate SIO levels established on potentially impacted areas of the ANF (see Table 16 of the Visual Resources Technical Report in Volume III of this Final EIS/EIR).

The Green Valley Multi-Line Relocation Alternative would be located higher up the mountain slopes than the Proposed Action, thereby allowing greater overall visibility and causing some additional skylining of structures. Although the Project would be generally more visible, the dominance of the structures would be somewhat reduced from many residences and from San Francisquito Canyon Road. While limited new road construction would occur, graded structure pad cuts and fills would be more evident than for the Proposed Action in cases where they are benched into the hillside and elevated in view. The exposed soil and landform contrasts would be visible to a greater number of sensitive viewers than the Proposed Action until revegetation occurs. In the long term, landform and structure contrasts and structure dominance would remain after vegetation recovers. The Proposed Action would create weaker landform and vegetation contrasts, but the structures would be more dominant for some viewers.

In some cases under the Green Valley Multi-Line Relocation Alternative, the existing 230 kV and 500 kV lines and structures would be removed from the primary viewing orientation of residences. These residences have primary views toward Green Valley, San Francisquito Canyon, Juniper Mountain, and other lands within ANF to the south and southeast. The line would also be removed from the immediate view of residences where the corridor is directly adjacent to homes, and therefore the Alternative would cause lower aesthetic impacts for these residences compared to the Proposed Action.

Photo-simulations were prepared to illustrate the variation in potential visibility and prominence between the alternatives. Figures 2.3-5 and 2.3-6 show the Green Valley Multi-Line Relocation Alternative and the Proposed Action from San Francisquito Canyon Road. As seen from this location, the Green Valley Multi-Line Relocation Alternative would reduce impacts on travelers and nearby residents, and would be less dominant in the viewshed. Figures 2.3-7 and 2.3-8 show the alternatives from Spunky Canyon Road. From this location, the Green Valley Multi-Line Relocation Alternative appears more visible than the Proposed Action due to its higher elevation, but would have the vegetated backdrop that would minimize structure contrasts. Although this simulation also shows standard dulled steel structures, the application of tower darkening mitigation along the Green Valley Multi-Line Relocation Alternative could help to reduce visibility from this viewpoint. However, such mitigation would also increase impacts where residences are located close to the line and have skylined views of the structures or where structures obstruct middleground and background views.

Biological Resources

The Green Valley Multi-Line Relocation Alternative would result in greater acreages of permanent and temporary ground disturbance and would impact a larger area of previously undisturbed habitat as compared to the Proposed Action. The total ROW for the Green Valley Multi-Line Relocation Alternative would cover an estimated 277 acres. All of this ROW would be newly acquired by LADWP and located on land not previously utilized for a transmission line. Of this, approximately 205 acres have been mapped as disturbed, 63 acres have been mapped as Southern Mixed Chaparral, seven acres have been mapped as Southern Sycamore Alder Riparian Woodland, and two acres have been mapped as agricultural. The total permanent ROW for the Proposed Action in the same area would cover an estimated 88 acres. All of this

ROW would be existing LADWP ROW and located on land previously utilized for a transmission line. Of this, approximately 78 acres has been mapped as disturbed, eight acres have been mapped as Southern Mixed Chaparral, two acres have been mapped as Southern Sycamore Alder Riparian Woodland, and one acre has been mapped as agricultural. An additional 73 acres of temporary ROW would also be required for the Proposed Action during construction for the implementation of the temporary transmission line. Of this, approximately 61 acres has been mapped as disturbed, seven acres have been mapped as Southern Mixed Chaparral, five acres have been mapped as Southern Sycamore Alder Riparian Woodland, and one acre has been mapped as agricultural.

Based on average ground disturbance estimates for construction by mileage of transmission line requiring road and helicopter access, implementation of the Green Valley Multi-Line Relocation Alternative would result in an estimated seven to nine acres of permanent ground disturbance. An estimated 90 to 100 acres of temporary disturbance would be required during construction. These estimates exclude the construction of new access roads. The implementation of the Proposed Action in the same area, including Three-Circuit Mitigation and associated the temporary transmission line, would result in less than one acre of permanent ground disturbance. An estimated 50 to 60 acres of temporary disturbance would be required during construction. No new access roads would be required for implementation of the Proposed Action. Temporary and permanent ground disturbance impacts would be expected to occur proportionately across the habitat types identified for each Alternative, with the exception of impacts to Southern Sycamore Alder Riparian Woodland. Impacts to the streams and associated riparian habitat would be limited on both the Alternative and Proposed Action, as construction would span and avoid these areas.

Other Resources

Air quality impacts during construction would be increased relative to the Proposed Action due to emissions from the use of helicopter construction for an additional three miles. Approximately 39 towers would be constructed by helicopter. A range of a approximately 146 to 480 individual helicopter trips can be assumed per tower, depending on tower type (CPUC and USFS 2010). Associated air quality emissions would represent an increase over those of the Proposed Action of approximately 30 tons per year for nitrogen oxides, seven tons per year for reactive organic gases, 28 tons per year for carbon monoxide, and two tons per year for particulate matter.

Impacts to Traffic and Transportation would decrease compared to the Proposed Action, since a temporary line along portions of the San Francisquito Canyon Highway would not be necessary. The highway would still serve as the main access road for the Project under the Green Valley Multi-Line Relocation Alternative; therefore, this decrease in impacts would be minimal.

Impacts related to cultural resources for the Green Valley Multi-Line Alternative would be moderately increased as compared to the Proposed Action. The Green Valley Multi-Line Alternative ROW would cross undisturbed areas that have not been surveyed for cultural resources. These areas would have a moderate sensitivity for containing cultural resources. Although the Proposed Action also has also been determined to have a moderate sensitivity for containing cultural resources, the Proposed Action would be contained within an existing transmission line ROW that has already been disturbed by maintenance roads. Additional construction-related local noise impacts would also be increased by the expanded use of helicopter construction as well as for the demolition of the existing lines. Impacts to other resources from this Alternative would be similar to those from the Proposed Action as described in this Final EIS/EIR.

Feasibility

This Alternative is considered feasible.

Recommendation for Analysis in the EIS/EIR

Elimination. The Green Valley Multi-Line Relocation Alternative would meet most of the basic purpose and need of the Project and is considered to be feasible. However, this alternative would reduce the ability to meet the USFS' purpose of minimizing effects of utility corridors on federally managed lands, and, with the exception of visual resources and traffic, would not avoid or minimize environmental impacts over the Proposed Action.

While some individual landowners would benefit from reduced local impacts through the relocation of the proposed and existing transmission lines farther from their residences, other individual land owners and users of NFS lands would experience increased impacts. Compared to the Proposed Action, this Alternative would increase inconsistency with the 2005 ANF LMP and the ROD for the West-Wide Energy Corridor Programmatic EIS. This Alternative would not improve the effectiveness of firefighting, decrease the risk of a wildfire event, or have the ability to decrease ignition potential as compared to the Proposed Action. While some decreased impacts would occur to visual resources overall and traffic during construction, increased impacts would occur to biological resources, air quality, noise, and cultural resources, and no benefits to other resources are expected. As the Green Valley Multi-Line Relocation Alternative would not meet the USFS' purpose and need of the Project, and would not avoid or minimize overall environmental effects in comparison with the Proposed Action, it is eliminated from further discussion in the EIS/EIR.

2.4 PROPOSED ACTION

LADWP is proposing the BRRTP to access clean, renewable resources in the Tehachapi Mountains and Mojave Desert area, and to improve reliability and upgrade transmission capacity. The Project area is located in Kern and Los Angeles counties. The Proposed Action (described in this Final EIS/EIR as Alternative 2) would extend 76 miles in length from the Barren Ridge Switching Station to Rinaldi Substation and extend 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station.

The sections below detail the construction process for each Project component, the construction sequence, LADWP General Practices, the construction work force and schedule, and operation and maintenance of the Project.

2.4.1 PROJECT COMPONENTS COMMON TO ALL ACTION ALTERNATIVES

Four of the BRRTP components are common to all action Alternatives analyzed in this Final EIS/EIR. These common components are described in the sections below.

Expansion of the Existing Barren Ridge Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet, for a total station size of 485 feet by 500 feet (approximately 5.7 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and a drainage area. The preliminary design layout for the station may be found in Appendix C of this Final EIS/EIR.

Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station as described below. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and four cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

It is estimated that 700 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 80 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 90-day working period. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. An estimated eight months with approximately 60 workers would be required to expand the station.

Construction of the Haskell Canyon Switching Station

As a component of the BRRTP, LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge – Haskell Canyon, existing Castaic – Northridge, Castaic – Sylmar, Castaic – Olive, and the proposed Castaic – Haskell Canyon). Although the station is proposed on LADWP-owned property, some adjacent private property may need to be acquired to address cut and fill requirements during station design for the stability of the slopes as well as accommodate the transmission lines that would connect to the station. (See the section headed "Right-of Way Permits and Grants" below in Section 2.4.2 for a discussion of private property acquisition.)

The station would be approximately 500 feet by 600 feet to accommodate the necessary circuit positions, which are made up of equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be approximately 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road approximately 16 feet wide and would be enclosed by chain-link fencing with barbed-wire extension for security. Figure 2-4 is a simulation of the proposed new switching station. The preliminary grading plan for the station is in Appendix C of this Final EIS/EIR.

Necessary pre-construction geotechnical investigation on-site would include six borings by a drill rig to investigate bedrock and soil stability and four cone penetration test locations after site grading to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push a 2.5-inch diameter cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers.

Site preparation work for the station would involve clearing and grading of access roads, clearing of the switchyard site, the cut and fill grading of the site, and placement and compaction of structural fill that would serve as a base for switching station facilities. The site would be graded to maintain current drainage patterns as much as possible. A 16-foot-wide paved road and a 100-foot by 100-foot gravel parking area would be required. The yard would be covered with crushed-rock aggregate. Native vegetation would be re-established where possible outside the switchyard fence.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Multiple transmission lines would terminate in the switching station (i.e., the new and existing Barren Ridge – Haskell and Castaic – Haskell Canyon transmission lines) and would need support and require the installation of galvanized steel structures. An existing 115 kV transmission line may need to be relocated around the proposed station. High-voltage bus work consisting of aluminum jumpers and tubing would be installed within the station.

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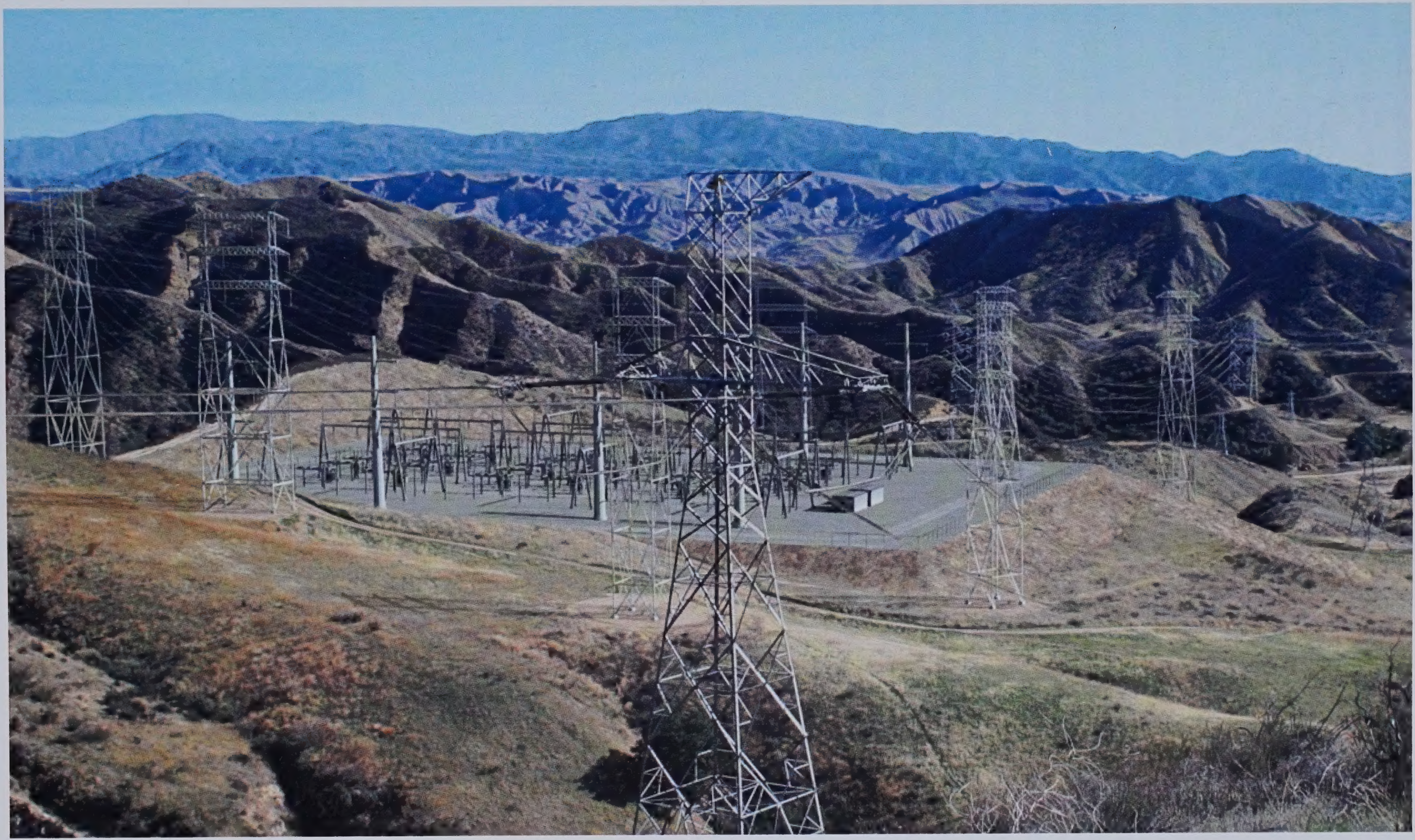
FIGURE 2-4. SIMULATION OF HASKELL CANYON SWITCHING STATION



This visual simulation is a representation of the proposed Haskell Canyon Switching station and addition of a new multi-circuit 230 kV transmission line. The tower location and heights may change pending approval of final design and engineering.

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Reconductor Existing 230 kV Transmission Line

LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. Four miles of BLM-managed public lands, 13 miles of National Forest System (NFS) lands, and 44 miles of private property would be traversed. The existing conductors (954/ 2,312 kcmil) would be replaced with a new 1,433.6 kcmil "Merrimack" ACSS/TW/HS (aluminum conductor steel supported/trapezoidal wires/high strength) conductor. The new conductor would have a larger diameter that allows for greater electrical capacity.

The upgrade of the existing BR-RIN would also require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, and cleanup). Removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. All work would remain within the existing 250-foot-wide ROW, with no additional ROW required. Some of the towers would need to be modified, replaced, and/or have foundations reinforced or replaced to carry the additional weight of the new heavier conductor. Refer to Figure 2-1 for the location of the reconductoring. See Figure 2-5, Cross Section K, for a representative cross-section of the proposed ROW.

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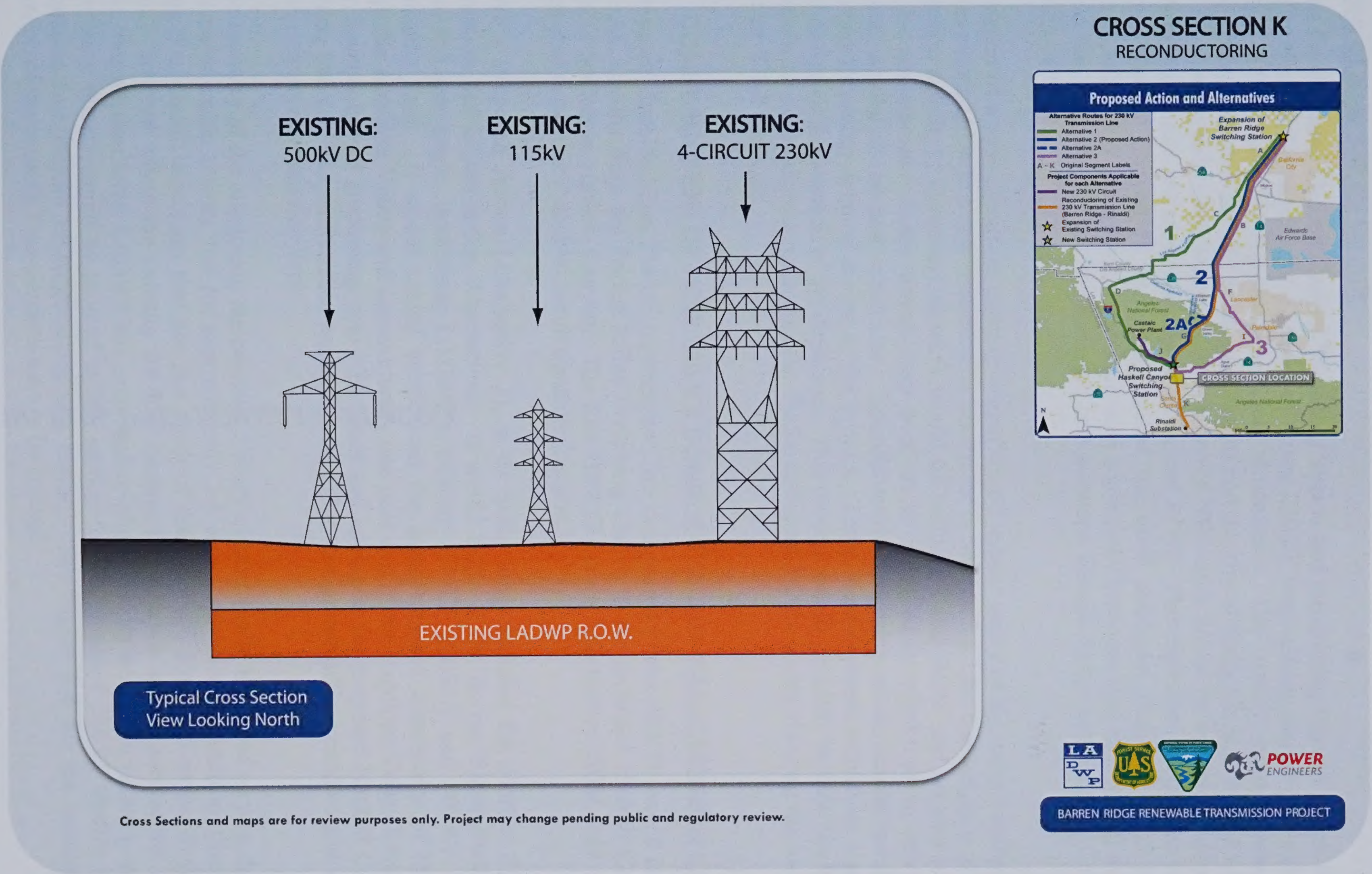
FIGURE 2-5. CROSS SECTION K


CROSS SECTION K
RECONDUCTORING
EXISTING: 500kV DC
EXISTING: 115kV
EXISTING: 4-CIRCUIT 230kV
EXISTING LADWP R.O.W.
Typical Cross Section View Looking North
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
A
B
C
D
F
G
I
J
K
1
2
2A
3
Edwards Air Force Base
Angeles National Forest
Castaic Power Plant
Proposed Haskell Canyon Switching Station
CROSS SECTION LOCATION
Angeles National Forest
Rinaldi Substation
N
0
5
10
15
20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

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Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures. The circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita. A total of 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed; however, the new circuit would not require a new or additional ROW. This new circuit would be called Castaic – Haskell Canyon #4 and would utilize the same conductor (bundled 715.5 kcmil "Starling" ACSS/AW [aluminum conductor steel supported/aluminum-clad steel wire]) as that proposed for the new 230 kV transmission line between Barren Ridge and Haskell Canyon Switching Stations.

The addition of a new circuit on existing towers would require many of the same construction activities associated with a new transmission line (refer to Section 2.4.2 for a description of each construction activity). However, all work would be within existing ROW and no new towers would be constructed. Some towers may need to be modified or reinforced to carry the additional weight of the new conductor. Specific towers requiring reinforcement would be determined following detailed design of the Project. Tower reinforcement would not alter the general design or the location of the structures. This process would generally include reinforced foundations or steel member replacements. Refer to Figure 2-1 for a map showing the location of the new 230 kV circuit.

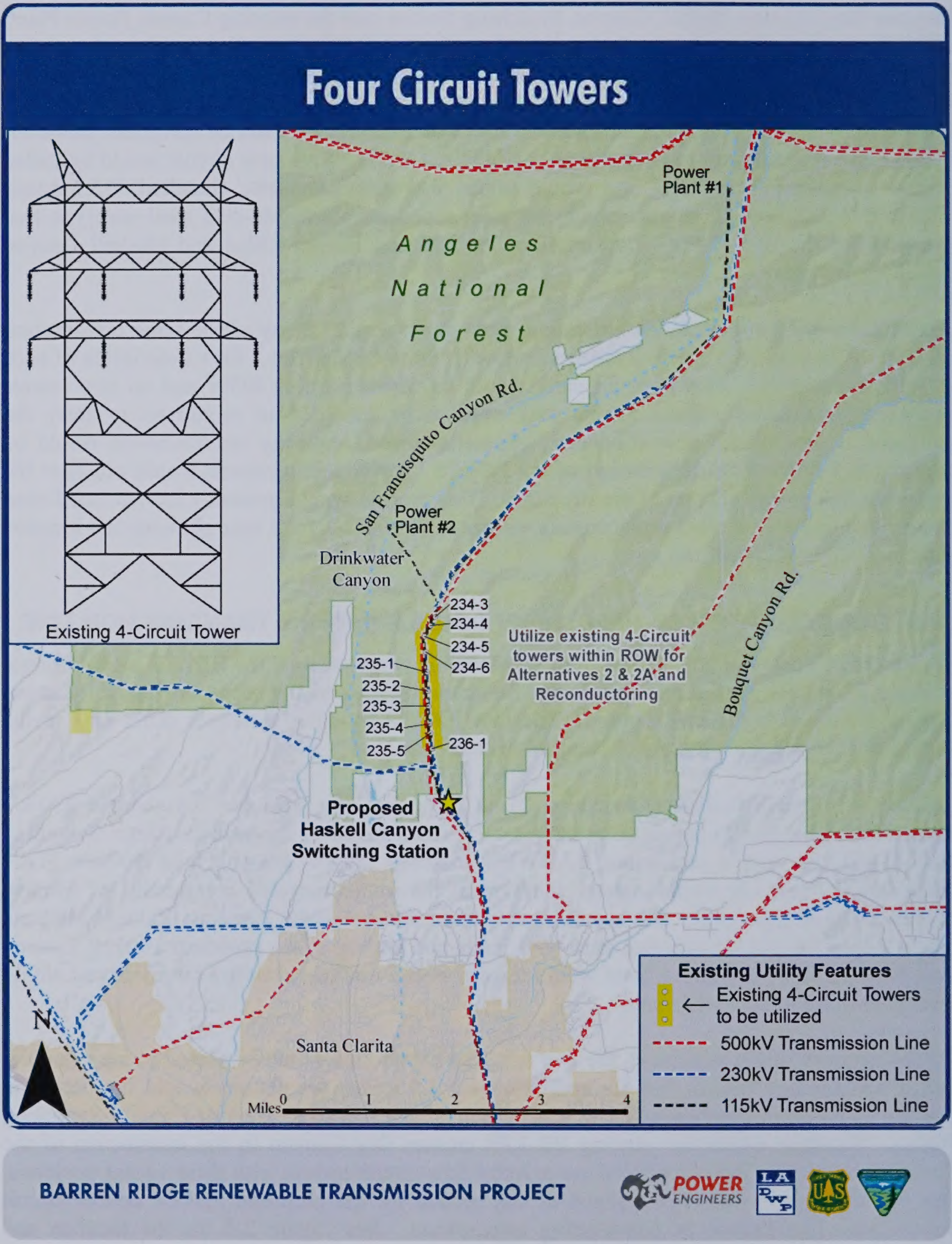
2.4.2 CONSTRUCTION OF NEW 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

The proposed double-circuit 230 kV transmission line component of the BRRTP would consist of two AC circuits from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station in Haskell Canyon. The four BRRTP action Alternatives differ only in the alignment of this 230 kV double-circuit transmission line.

LADWP's Proposed Action (Alternative 2), at 61 miles long, includes the shortest 230 kV transmission line of the action Alternatives. It would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would extend south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The entire route would remain within designated utility corridors and would parallel existing transmission lines.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles, the circuits would be placed on existing four-circuit structures that are just north of the proposed Haskell Canyon Switching Station. Between where the existing BR-RIN crosses Dry Canyon to the intersection of the Castaic transmission lines, LADWP has existing four-circuit towers with three vacant positions. The existing towers would be utilized in this section for the proposed 230 kV double circuit transmission line instead of constructing new towers. See Figure 2-6 for the location and illustration of the existing four-circuit towers to be utilized.

FIGURE 2-6. FOUR-CIRCUIT TOWERS TO BE UTILIZED FOR BRRTP


Four Circuit Towers
Existing 4-Circuit Tower
Power Plant #1
Angeles National Forest
San Francisquito Canyon Rd.
Power Plant #2
Drinkwater Canyon
234-3
234-4
234-5
234-6
235-1
235-2
235-3
235-4
235-5
236-1
Utilize existing 4-Circuit towers within ROW for Alternatives 2 & 2A and Reconductoring
Bouquet Canyon Rd.
Proposed Haskell Canyon Switching Station
Santa Clarita
N
Miles 0 1 2 3 4
Existing Utility Features
Existing 4-Circuit Towers to be utilized
500kV Transmission Line
230kV Transmission Line
115kV Transmission Line
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Right-of-Way Permits and Grants

The new 230 kV double-circuit transmission line would generally parallel the existing 230 kV transmission line that would be reconductored for the entire length (61 miles). Nine miles of the new 230 kV transmission line and reconductoring would be constructed utilizing the Three-Circuit Tower Mitigation, described below, in which the three circuits would be placed on the same towers. Therefore, both of these Project components would cross 13 miles of the ANF, four miles of lands managed by the BLM, and 44 miles of private lands; and traverse the unincorporated communities of Mojave, Willow Springs, Antelope Acres, Green Valley, and Elizabeth Lake, and the city of Santa Clarita, with a majority of the Proposed Action in unincorporated Kern and Los Angeles Counties. For the new 230 kV transmission line, LADWP is seeking a BLM right-of-way grant and USFS Special Use Authorization for an additional 200-foot-wide ROW that would be adjacent to LADWP's existing BR-RIN ROW. See Figures 2-7, 2-8 and 2-9, Cross-Sections A, E and F, for representative cross-sections of the proposed ROW.

Forty-four miles of private lands would be traversed by the 230 kV transmission line and require a 200-foot-wide ROW, including what may be necessary to allow the construction of the Haskell Canyon Switching Station and the connection of all existing transmission lines within the area to the station. As necessary, LADWP would seek to purchase the private property required for the Project. As soon as a property has been identified through the final design planning and after the completion of the environmental review and approval process, the property owner would be notified of the LADWP's interest in acquiring the property. After the appraisal and inspection process, a written offer would be presented to the property owner. If an agreement could not be reached after the LADWP had exhausted all its opportunities to reach a settlement with a property owner, the City could choose to exercise its power of eminent domain. For discussion of the potential impacts of eminent domain, please see Chapter 4, Section 4.2.3, Land Use, and Section 4.2.13, Socioeconomics. In some instances, the LADWP could instead seek an easement on the property, rather than ownership in fee.

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FIGURE 2-7. CROSS SECTION A

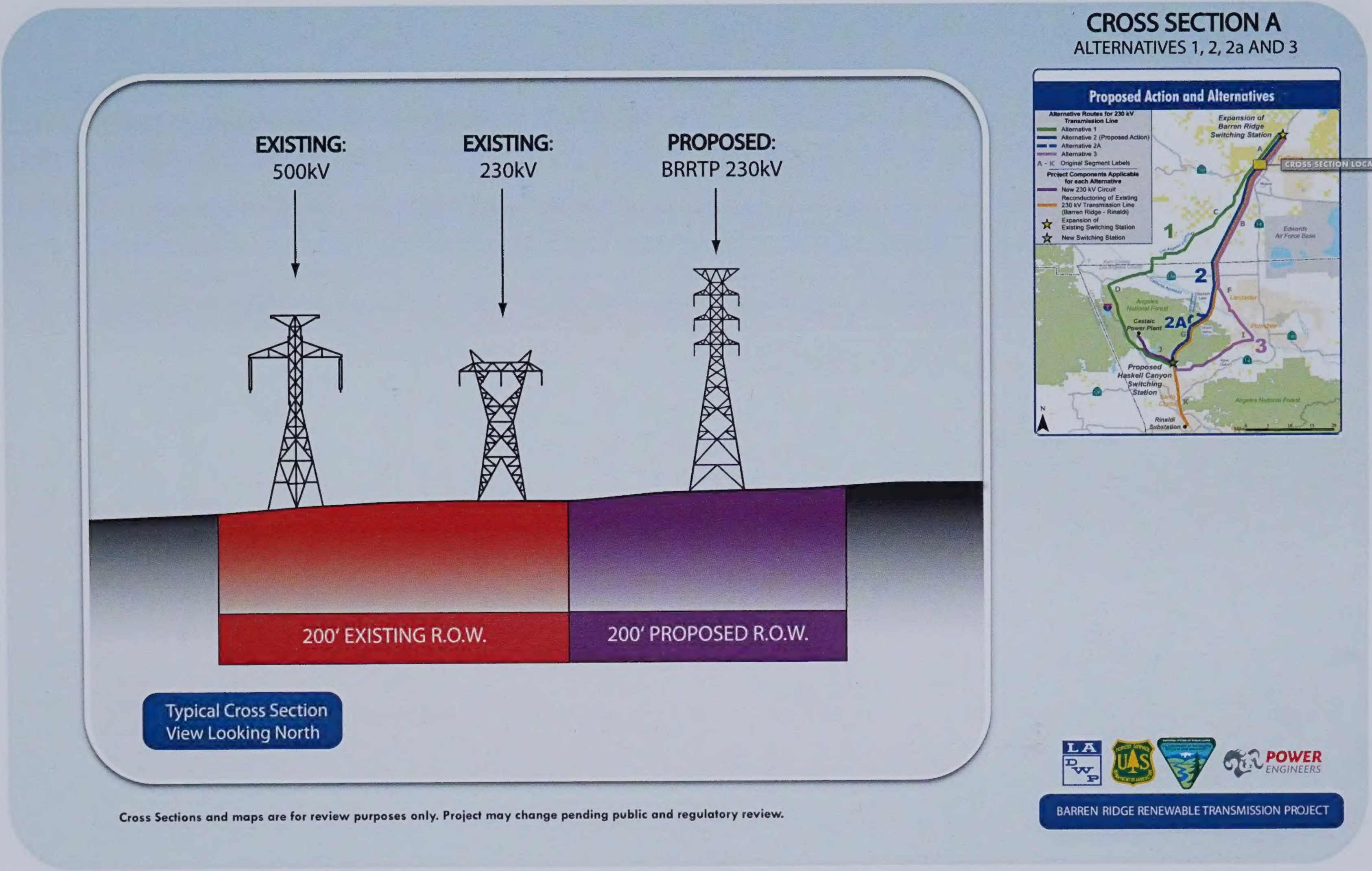
CROSS SECTION A
ALTERNATIVES 1, 2, 2a AND 3
EXISTING: 500kV
EXISTING: 230kV
PROPOSED: BRRTP 230kV
200' EXISTING R.O.W.
200' PROPOSED R.O.W.
Typical Cross Section View Looking North
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
CROSS SECTION LOCATION
A
B
C
D
F
G
I
J
K
1
2
2A
3
Edwards Air Force Base
Angeles National Forest
Lancaster
Palmdale
Castaic Power Plant
Proposed Haskell Canyon Switching Station
Rinaldi Substation
Angeles National Forest
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

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FIGURE 2-8. CROSS SECTION E

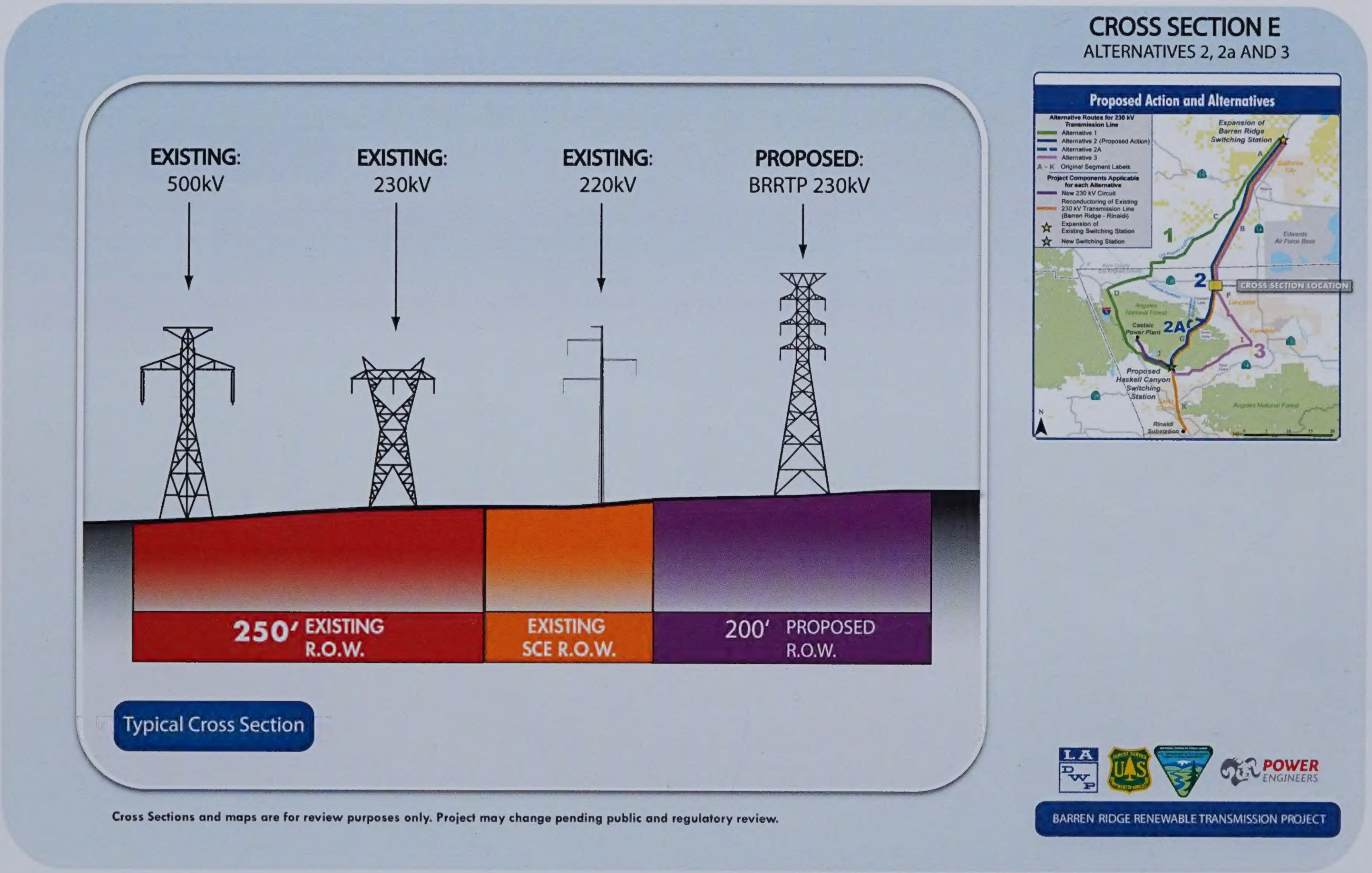
CROSS SECTION E
ALTERNATIVES 2, 2a AND 3
EXISTING: 500kV
EXISTING: 230kV
EXISTING: 220kV
PROPOSED: BRRTP 230kV
250′ EXISTING R.O.W.
EXISTING SCE R.O.W.
200′ PROPOSED R.O.W.
Typical Cross Section
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
CROSS SECTION LOCATION
1
2
2A
3
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
Proposed Haskell Canyon Switching Station
Rinaldi Substation
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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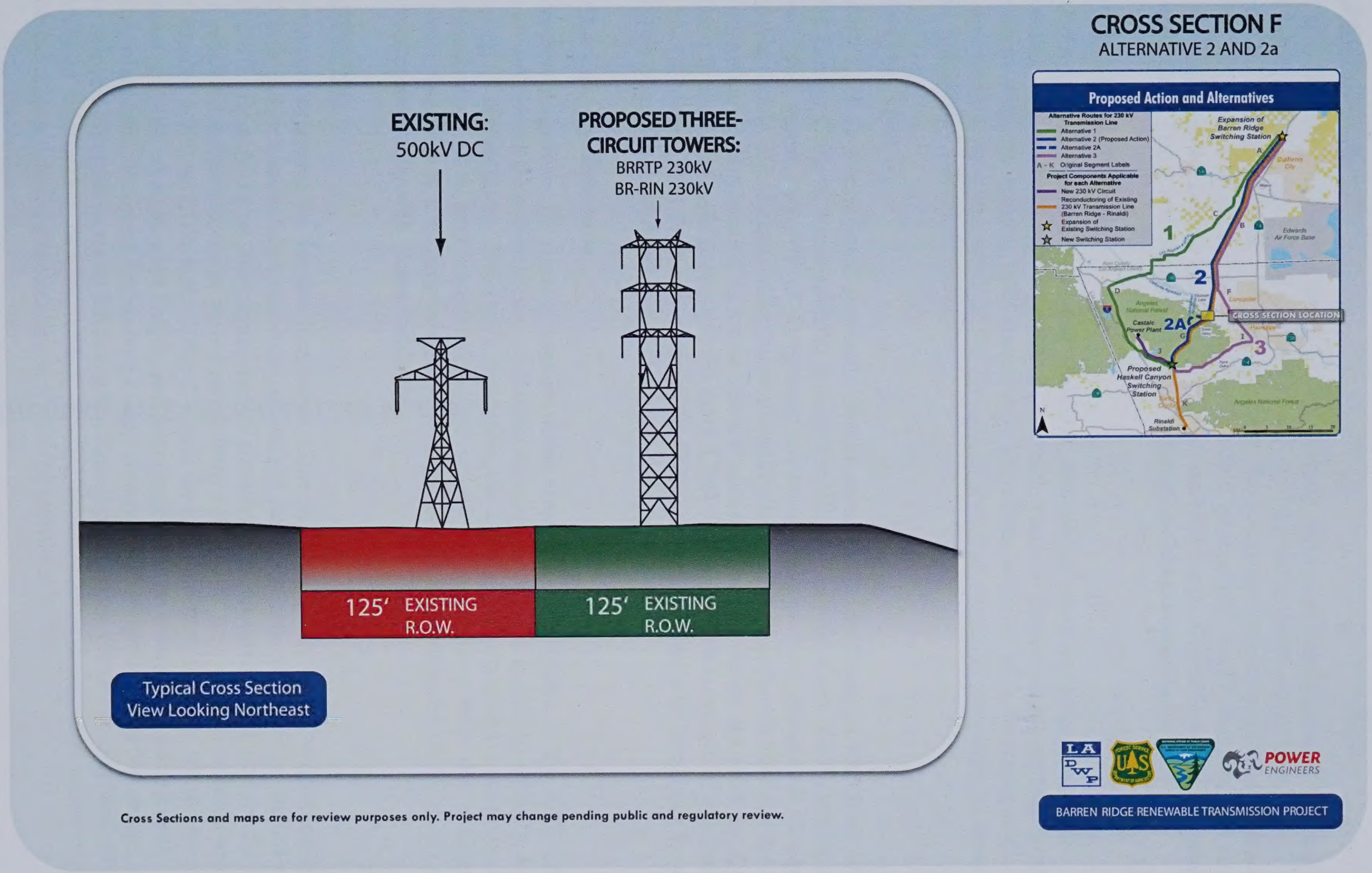
FIGURE 2-9. CROSS SECTION F


CROSS SECTION F
ALTERNATIVE 2 AND 2a
EXISTING:
500kV DC
PROPOSED THREE-CIRCUIT TOWERS:
BRRTP 230kV
BR-RIN 230kV
125′ EXISTING R.O.W.
125′ EXISTING R.O.W.
Typical Cross Section View Looking Northeast
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Lancaster
Palmdale
Angeles National Forest
Castaic Power Plant
Proposed Haskell Canyon Switching Station
Rinaldi Substation
CROSS SECTION LOCATION
1
2
2A
3
A
B
C
D
F
G
I
J
K
N
Miles
0
5
10
15
20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

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Plan Amendments

On land under the jurisdiction of BLM, an existing utility corridor (Corridor A) would be utilized, and no California Desert Conservation Area Plan amendment would be required. Prior to the USFS issuing a Special Use Authorization, the following Project-specific amendments to the 2005 ANF Land Management Plan (LMP) would be required: Forest Standards S9 and S10 (related to meeting the Scenic Integrity Objectives on NFS lands), Forest Standard S1 (related to the Pacific Crest Trail), and Standards related to Riparian Conservation Areas.

Scenic Integrity Objective

The USFS has adopted management standards for visual resources addressing SIOs. The construction and operation of Alternative 2 would result in some conditions that would be inconsistent with the existing SIO standards. Therefore, adoption of a Project-specific ANF LMP amendment for those areas in the Record of Decision would be necessary to ensure the Project consistency with those standards.

Pacific Crest Trail

The ANF LMP has established a specific design standard for the Pacific Crest Trail (Forest-specific Design Criteria, Place-specific Standard ANF S1 - Pacific Crest Trail), which states: “Protect [the] scenic integrity of foreground views as well as from designated viewpoints. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail.” The construction and operation of a new 230 kV transmission line would not meet the Desired Condition or the SIO levels specific to the ANF LMP, and would not comply with the Standard ANF S1. Adoption of a Project-specific ANF LMP amendment would be necessary to ensure the Project consistency with this standard.

Riparian Conservation Area

Management objectives for riparian conservations areas were established in the ANF LMP to maintain or improve long-term aquatic and riparian ecosystem health, including quantity, quality, and timing of stream flows. Even with mitigation, the construction, operation, maintenance, and decommissioning of a new transmission line would be inconsistent with the management objectives. Adoption of a Project-specific ANF LMP amendment would be necessary to ensure the Project consistency with those standards.

Construction

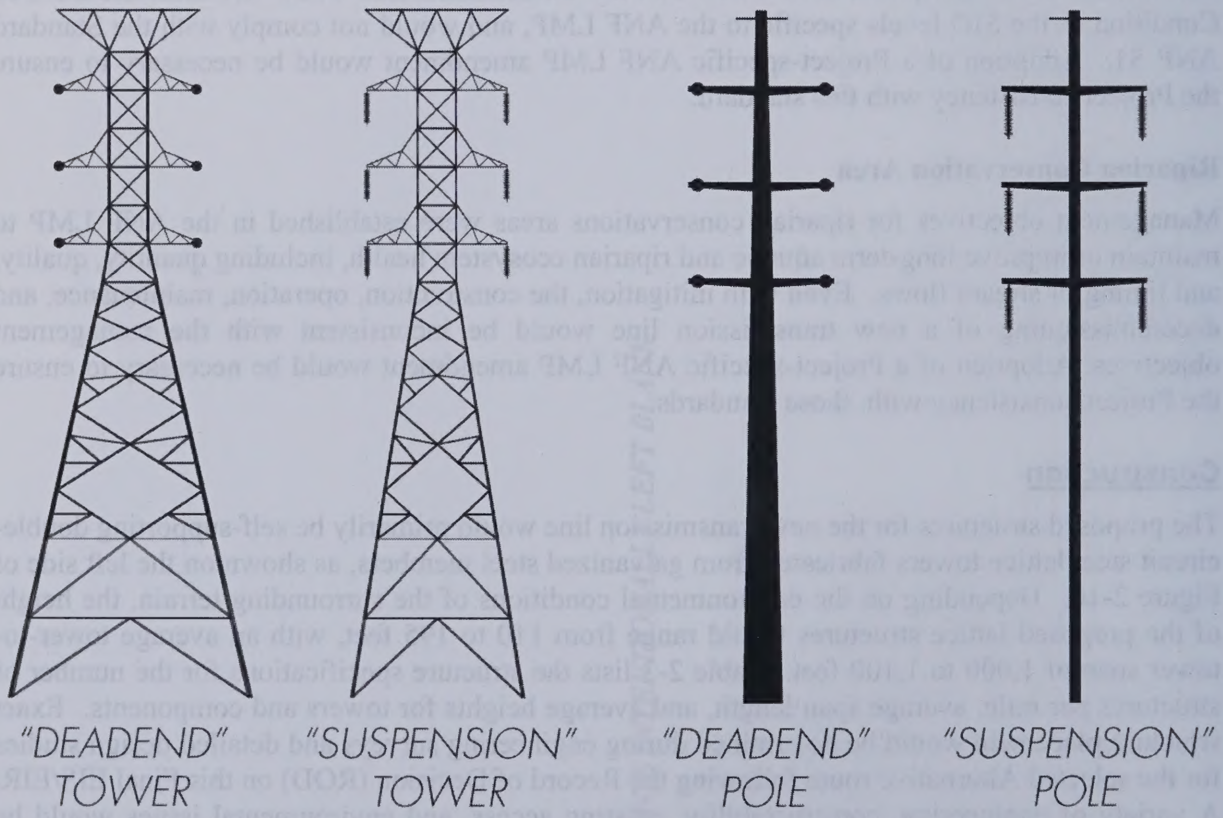
The proposed structures for the new transmission line would primarily be self-supporting double-circuit steel lattice towers fabricated from galvanized steel members, as shown on the left side of Figure 2-10. Depending on the environmental conditions of the surrounding terrain, the height of the proposed lattice structures would range from 110 to 195 feet, with an average tower-to-tower span of 1,000 to 1,100 feet. Table 2-3 lists the structure specifications for the number of structures per mile, average span length, and average heights for towers and components. Exact structure placement would be determined during engineering surveys and detailed design studies for the selected Alternative route following the Record of Decision (ROD) on this Final EIS/EIR. A variety of engineering, constructability, existing access, and environmental issues would be considered during detailed structure siting within the permitted ROW.

TABLE 2-3. DOUBLE-CIRCUIT STEEL LATTICE TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Categories 1 through 3 Flat (0 – 10% slope)	Categories 4 through 6 Mountainous (10 – 30% slope)
Towers per mile	±5	±5
Average span length	1100 feet	1000 feet
Average height		
Ground to lowest attachment	115 feet	105 feet
Upper body height	52 feet	52 feet
Overall tower height	167 feet	157 feet
Typical range of heights of new towers	120 – 195 feet	110 – 185 feet

"Dead-end" towers of self-supporting, steel-lattice design would be required periodically to add longitudinal strength along the line. Dead-end towers would also be used at turn (angle) locations along the line, at heavily loaded tower locations, and at specific utility crossings (e.g., other transmission lines) for added safety. Dead-ended towers are of the same basic configuration as suspension towers (non-angle structures), the difference being in the tower "arms," insulator systems, and tower weights.

FIGURE 2-10. TYPES OF DOUBLE-CIRCUIT TOWERS



Self-supporting tubular steel poles (TSP) have been proposed by LADWP as an available mitigation structure where appropriate to reduce potential impacts, such as conflicts with cultivation on agricultural lands. The TSPs can reduce impacts in some cases due to a smaller footprint than the proposed self-supporting steel lattice structures; however, more TSPs per mile would be necessary due to a shorter average span between structures. The TSPs would have an average height range between 95 and 180 feet, depending on the conditions of the surrounding terrain, with an average tower-to-tower span of 700 to 800 feet. Refer to Figure 2-10 for an illustration of the double-circuit TSPs.

The self-supporting steel lattice structures and TSPs would utilize concrete foundations. Steel lattice structures would require four footings (one for each leg); TSPs would require single footings. Footings would be steel-reinforced concrete pier type and be cast in place. The typical design for the concrete footings for lattice structures would be between 2.5 and 5.0 feet in diameter, with an average depth of 20 feet depending on soil conditions. Typical design for single foundations for TSPs would include augured holes approximately five to seven feet in diameter and 15 to 30 feet deep, depending on conditions. Formwork steel reinforcing would be assembled in the hole prior to casting concrete in place. Reinforcing steel would become integral to the lower leg of the steel lattice structure during assembly. An above-ground concrete form placed over each hole would result in a final concrete foundation height of 0.5 to 2.0 feet above ground level.

FIGURE 2-11. TYPICAL FOUNDATION DESIGN FOR THE DOUBLE-CIRCUIT STEEL LATTICE TOWERS

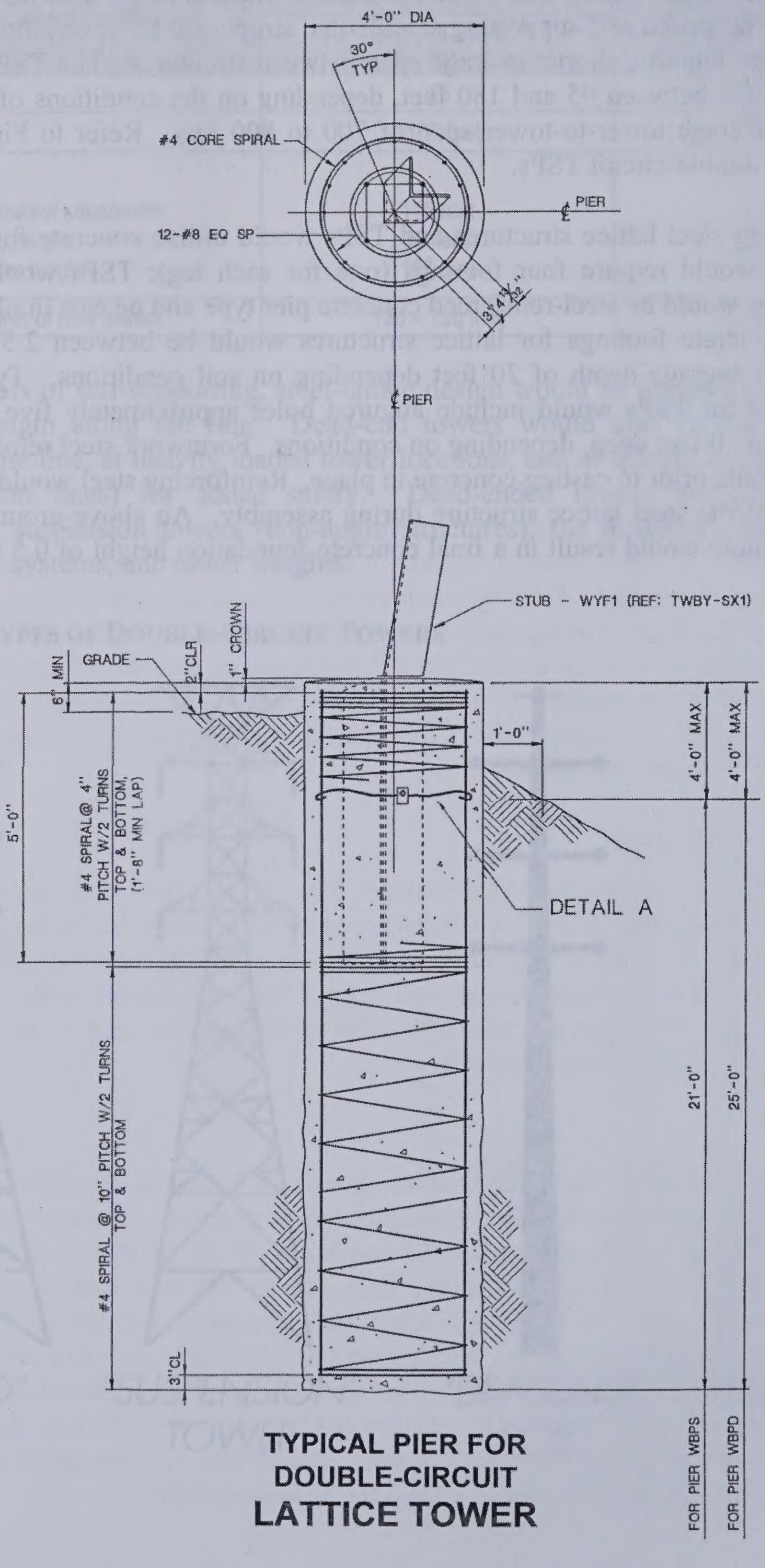
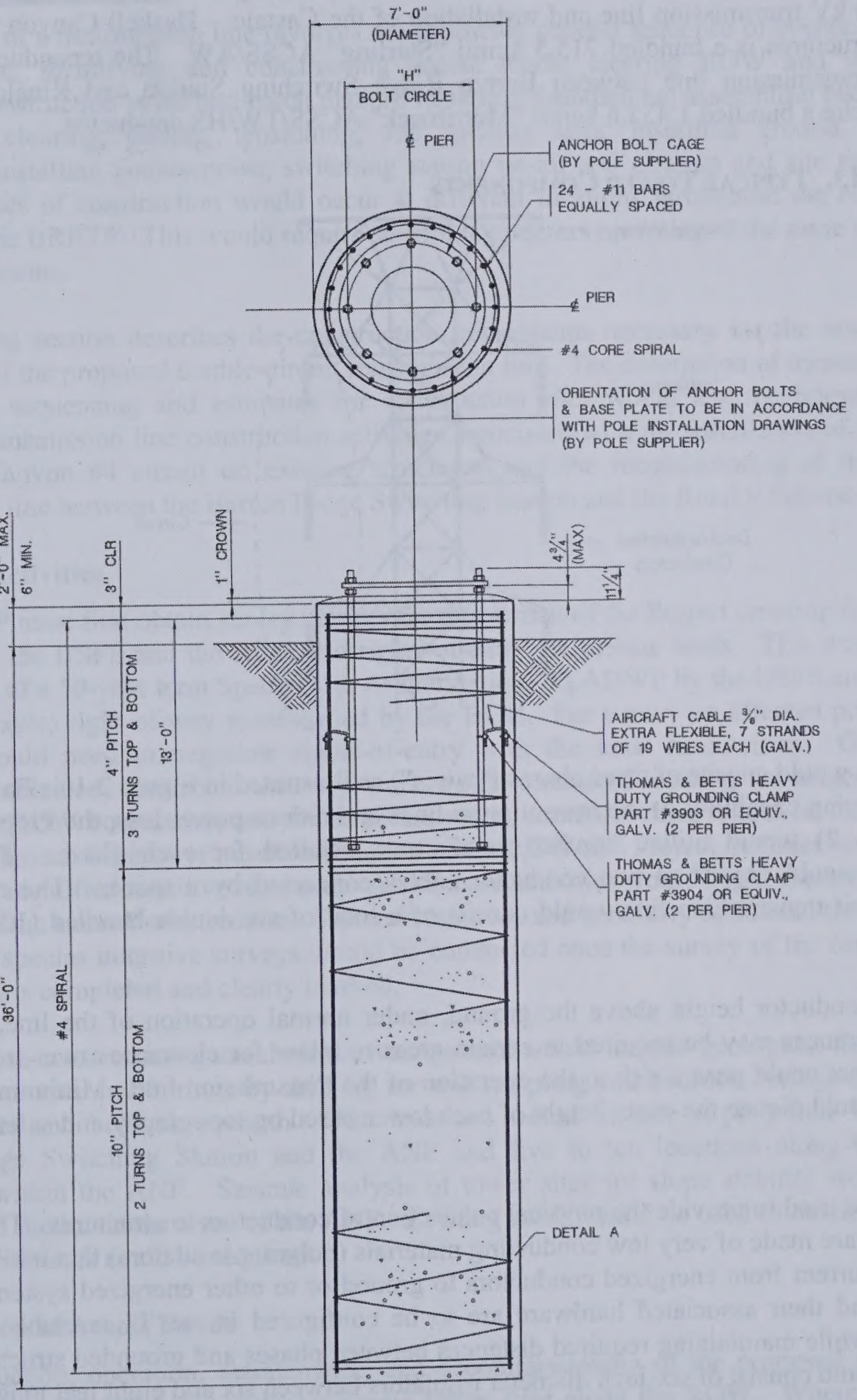

4'-0" DIA
30° TYP
#4 CORE SPIRAL
℄ PIER
12-#8 EQ SP
3 1/2"
℄ PIER
STUB - WYF1 (REF: TWBY-SX1)
6" MIN
GRADE
2"CLR
1" CROWN
1'-0"
5'-0"
#4 SPIRAL @ 4" PITCH W/2 TURNS TOP & BOTTOM, (1'-8" MIN LAP)
DETAIL A
4'-0" MAX
4'-0" MAX
#4 SPIRAL @ 10" PITCH W/2 TURNS TOP & BOTTOM
21'-0"
25'-0"
3"CL
TYPICAL PIER FOR DOUBLE-CIRCUIT LATTICE TOWER
FOR PIER WBPS
FOR PIER WBPD

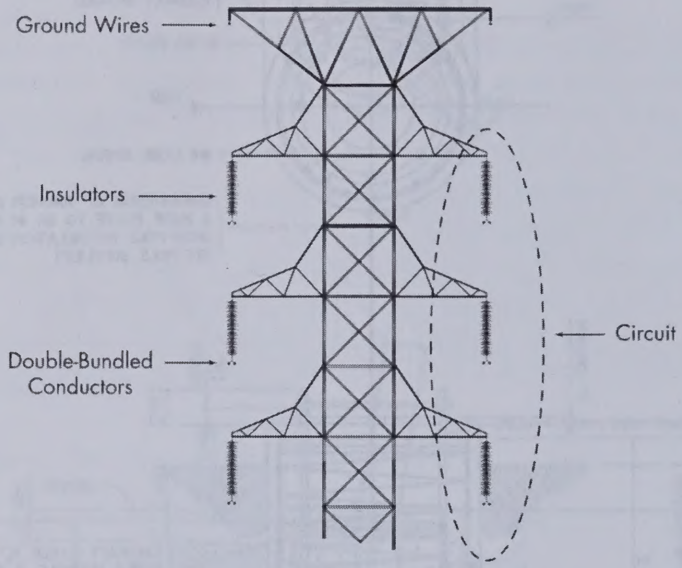
FIGURE 2-12. TYPICAL FOUNDATION DESIGN FOR TUBULAR STEEL POLES


7'-0"
(DIAMETER)
"H"
BOLT CIRCLE
℄ PIER
ANCHOR BOLT CAGE
(BY POLE SUPPLIER)
24 - #11 BARS
EQUALLY SPACED
℄ PIER
#4 CORE SPIRAL
ORIENTATION OF ANCHOR BOLTS
& BASE PLATE TO BE IN ACCORDANCE
WITH POLE INSTALLATION DRAWINGS
(BY POLE SUPPLIER)
2'-0" MAX.
6" MIN.
3" CLR
1" CROWN
4¾" (MAX)
1¼"
4" PITCH
3 TURNS TOP & BOTTOM
13'-0"
AIRCRAFT CABLE ⅜" DIA.
EXTRA FLEXIBLE, 7 STRANDS
OF 19 WIRES EACH (GALV.)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3903 OR EQUIV.,
GALV. (2 PER PIER)
THOMAS & BETTS HEAVY
DUTY GROUNDING CLAMP
PART #3904 OR EQUIV.,
GALV. (2 PER PIER)
36'-0"
#4 SPIRAL
10" PITCH
2 TURNS TOP & BOTTOM
DETAIL A

TYPICAL PIER FOR DOUBLE-CIRCUIT POLE

As illustrated in Figure 2-13, Typical Tower Components, each tower carries conductors ("wires"), insulators, and ground wires. The conductor being considered for the new double-circuit 230 kV transmission line and installation of the Castaic – Haskell Canyon #4 circuit on existing structures is a bundled 715.5 kcmil "Starling" ACSS/AW. The reconductoring of the BR-RIN transmission line between Barren Ridge Switching Station and Rinaldi Substation would require a bundled 1,433.6 kcmil "Merrimack" ACSS/TW/HS conductor.

FIGURE 2-13. TYPICAL TOWER COMPONENTS



Each circuit would consist of three phases ("wires") as illustrated in Figure 2-10. To increase the current-carrying capability of the transmission lines and reduce power loss, the Proposed Action (Alternative 2) would utilize bundled conductors installed for each phase. The bundled conductors would consist of two conductor cables connected by a spacer. The new 230 kV double-circuit transmission line would consist of a total of six double-bundled (12 individual) wires.

Minimum conductor height above the ground, under normal operation of the line, is 30 feet. Greater clearances may be required in certain areas to allow for clearances over trees or other vegetation that could pose a risk to the operation of the transmission line. Minimum conductor clearance would dictate the exact height of each tower based on topography and safety clearance requirements.

Insulators are used to provide the physical connection of conductors to structures. These system components are made of very low conducting materials (polymer insulators) that inhibit the flow of electric current from energized conductors to ground or to other energized system elements. Insulators and their associated hardware are to be configured in an "I" assembly to support conductors while maintaining required distances between phases and grounded structures. Each "I" string would consist of six-inch diameter insulators between six and eight feet long.

To shield conductors from the hazard of direct lightning strikes by transferring lightning currents into the ground, overhead ground wires (shield wires) or fiber optic ground wire would be installed on top of new structures.

Construction Sequence

Construction of a transmission line involves the following general sequence of events: surveying the centerline; identifying and constructing access roads; clearing ROW and tower sites (including construction yards and batch plants); installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie-in; and cleanup and site reclamation. Various phases of construction would occur at different locations throughout the construction process for the BRRTP. This would require several contractors operating at the same time and in different locations.

The following section describes the construction components necessary for the assembly and installation of the proposed double-circuit transmission line. The description of transmission line construction sequencing and estimates for construction sites would also be relevant for the additional transmission line construction activities associated with the installation of the Castaic – Haskell Canyon #4 circuit on existing structures, and the reconductoring of the BR-RIN transmission line between the Barren Ridge Switching Station and the Rinaldi Substation.

Surveying Activities

The LADWP must first obtain survey permits for the portion of the Project crossing federal lands managed by the USFS and the BLM and rights-of-entry for private lands. This would include the issuance of a 50-year term Special Use Authorization to LADWP by the USFS and a 30-year term (renewable) right-of-way grant issued by the BLM. For survey on affected private lands, LADWP would need to negotiate rights-of-entry with the local landowners. Once survey permits are obtained, construction survey work would consist of locating the centerline, tower center hubs, ROW boundaries, and tower access roads, some of which would be outside of the ROW boundaries. Whenever possible, location of the ROW and Project facilities would be laid out to avoid identified sensitive resources. All of these activities would begin approximately one year prior to the start of construction. Cultural resources and necessary additional threatened and endangered species intensive surveys would be conducted once the survey of the centerline and access roads is completed and clearly marked.

Necessary pre-construction geotechnical investigations would include geological field mapping of each tower site, and borings by drill rig for soil sampling and bedrock corings to determine soil densities and bedrock strength. Test locations would include angle points between the Barren Ridge Switching Station and the ANF and five to ten locations along the selected alignment within the ANF. Seismic analysis of tower sites for slope stability would also be necessary in mountainous areas of the ANF. Existing roads would be used as much as possible, but some new roads could be required.

Construction of Access Roads

The construction, operation, maintenance, and decommissioning of the proposed transmission line would require that heavy vehicles access tower sites along the ROW. Where new access roads are required, they would be constructed to support the weight of these vehicles and would typically be 16 feet wide, consisting of a 14-foot driving surface with a side drainage system between one and two feet in width. Permanent roads would be constructed where necessary for operation or maintenance. LADWP Access and Patrol Road Standards are included in Appendix C, and project road standards would be addressed specifically in the Construction, Operation, and Maintenance Plan (COM Plan) and the Plan of Development (POD) during the engineering phase of the Project, and prior to a Notice to Proceed from the USFS and BLM.

Existing paved and unpaved highways and roads would be used where possible. Roads along existing utility corridors would also be used where possible to minimize new access road construction. In locations where existing roads could be used, that are close to the proposed or existing ROW centerlines, only new spur roads to the tower sites would be constructed. The specific locations and design of all new access and spur roads would be determined during final Project design. Table 2-4 lists the estimated ground disturbance of access and spur roads based on terrain.

Table 2-4. Access and Spur Road Ground Disturbance Estimates

Ground Disturbance Categories	Access Roads		Spur Roads (average width 16 feet)	
	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line*	Average Miles of Roads Per Mile of Transmission Line	Average Acres of Disturbance Per Mile of Transmission Line
1. Existing roads or agricultural land; no widening anticipated	n/a	n/a	0.3	0.6
2. Existing 8-foot wide roads that require an additional 8 feet of widening	1.0 to 2.5	Permanent 0.9 to 2.4	0.3	0.6
3. Construct new road on flat terrain (0-10%)	1.0 to 2.5	Permanent 1.9 to 4.8	0.3	0.6
4. Construct new road on sloping terrain (10-20%)[1]	2.5 to 4.0	Temporary 7.3 to 11.6 Permanent 4.8 to 7.7	0.5	1.0
5. Construct new road on steep terrain (20-30%)[1, 2]	4.0 to 6.0	Temporary 23.3 to 34.9 Permanent 7.7 to 11.6	0.8	1.6
6. Construct road on very steep terrain (greater than 30%)[1, 2]	6.0 to 8.0	Temporary 69.8 to 93.1 Permanent 11.6 to 15.5	1.0	1.9

[1] After construction of the transmission line, all access roads in Categories 4 through 6 would be re-vegetated back to 16 feet wide.

[2] On steep terrain (approximately 25% or higher) with limited access on the Angeles National Forest, the USFS may require Helicopter Mitigation as described in Section 2.4.4 of this Chapter.

Wherever possible, roads would be built at right angles to streams and washes. Culverts or other drainage structures would be installed as necessary across drainages, but the roads would usually follow the natural grade. In addition, road construction would include dust control and erosion control measures in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line without changing their service level. Gates would be installed where required at fenced property lines to restrict general vehicular access from or to the ROW. Where identified within the environmental studies for mitigation purposes, access roads may be excluded or limited within specific sensitive areas, such as Riparian Conservation Areas (RCAs) on the Angeles National Forest.

Clearing Right-of-Way

The clearing of some natural vegetation may be required. However, selective clearing would be performed only when necessary to provide for surveying, electrical safety clearances, line reliability, and maintenance. Trimming or removal of mature vegetation, under or near the conductors, would be done to provide adequate electrical clearance as required by the National Electrical Safety Code, the North American Electrical Reliability Corporation, and California Public Utilities Commission General Order 95 standards.

Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures are to top or remove large trees and not disturb smaller trees. Where there is a direct conflict between trees and clearance standards, the removal of trees would be jointly reviewed and agreed upon between LADWP and the owners or managers of the property. Rights-of-way would not be chemically treated unless necessary to comply with requirements of a permitting agency. On NFS lands and on public lands managed by the BLM, approved herbicides would be utilized within the Project area on select invasive plant species. Invasive plant surveys and control would continue for the life of the Project.

Tower Site Clearing

After access roads are developed, preparation of individual structure sites would be required prior to installation of the structures. At tower locations, work areas of up to 200 feet square in flat terrain and up to 200 by 250 feet in areas with slopes greater than eight percent may be needed. Within the work areas, at some tower locations, a level cleared area (pad) may be necessary to complete the construction of the towers. However, many tower sites would be considerably smaller depending on the size of the tower, the terrain, resource considerations, and whether helicopter construction was used, among other factors. The work area would be required for the location of tower footings, assembly of the tower, and the necessary crane maneuvers. Vegetation would be mostly crushed, and cleared only when necessary. All pads not needed for normal transmission line maintenance would be graded to blend as near as possible with the natural contours, and revegetated where required by a permitting agency. See Table 2-7 for estimated temporary and permanent ground disturbance associated with the double-circuit steel lattice towers.

Staging Areas and Batch Plants

It is anticipated that one or two construction yards or staging areas would be required for materials storage, construction equipment, construction vehicles, and temporary construction offices. Staging areas would be approximately five acres in size, and located centrally or near each end of the transmission line route. The staging areas would be on previously disturbed private land and would be level and surfaced with crushed aggregate base. The LADWP would negotiate with landowners for specific locations of the staging areas.

Concrete for use in constructing foundations would be dispensed from a portable concrete batch plant located at approximately 15 mile intervals along the proposed line route. A rubber-tired flatbed truck and tractor would be used to relocate each plant along the ROW. Commercial ready-mix concrete would be used when access to tower construction sites is economically feasible.

The construction yards and batch plants would be located on private land and serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. Facilities would be fenced and their gates locked. Security guards would be stationed where needed. See Table 2-5 for estimated ground disturbance associated with the staging sites and batch plants.

TABLE 2-5. STAGING SITES AND BATCH PLANT GROUND DISTURBANCE ESTIMATES

Disturbance Description	Categories 1 through 3 Flat (0 – 10% slope)*	
	Maximum Estimated Disturbance Dimension per site	Average Disturbance
Material staging sites (2 sites)	400 x 540 feet (5 acres)	N/A
Concrete batch plants (3 sites maximum)	2 acres, 30 mile haul distance	0.2 acre per mile
Total Average Disturbance	**0.2 acre per mile**	

*Material staging sites and concrete batch plants would not be built on terrain above 10% slope.

Foundation Installation

Tower foundations for the lattice structures would consist of drilled concrete piers. The foundation process would start with the boring of four holes for each lattice structure or one hole for each TSP. The holes would be bored using truck- or track-mounted excavators with various diameter augers to match diameter and depth requirements of the foundation sizes.

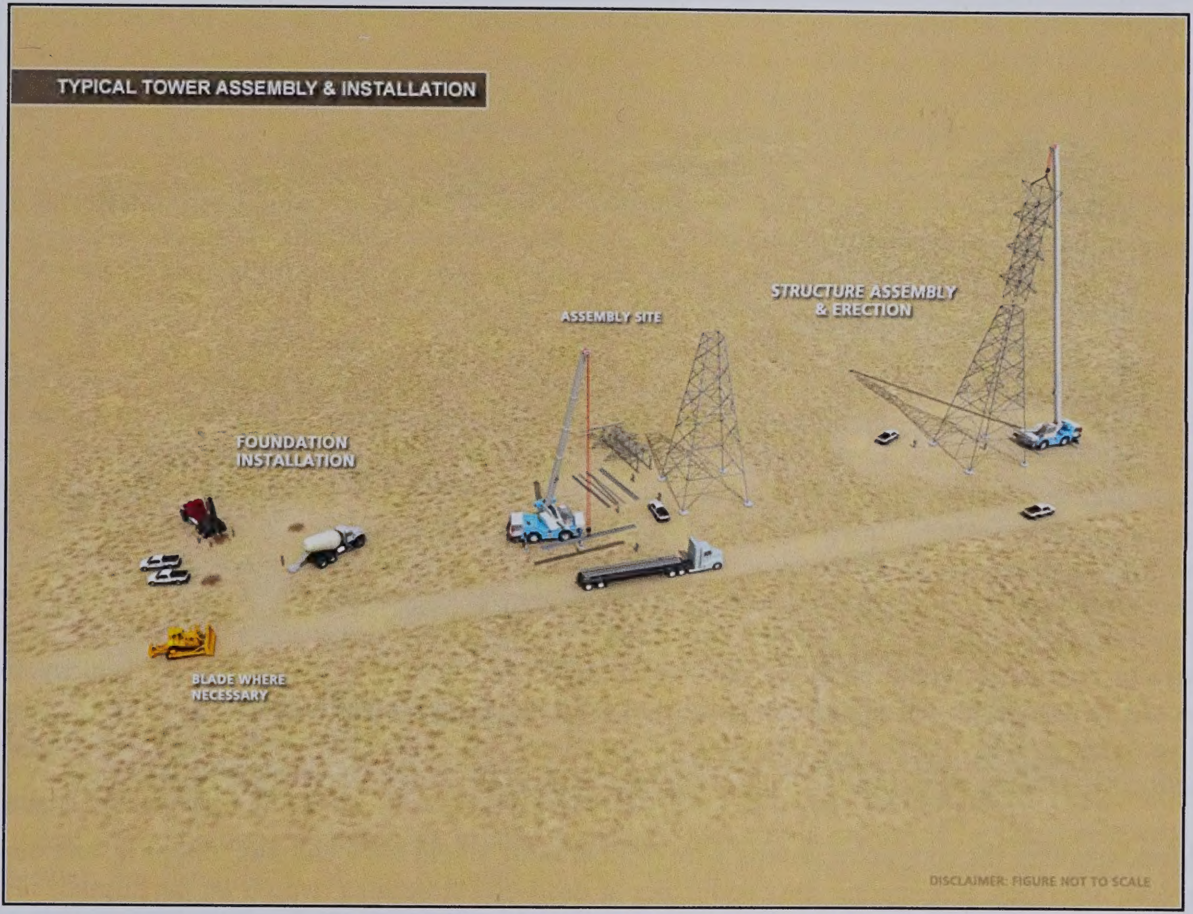
For a typical suspension lattice tower, each hole would typically be 2.5 feet in diameter and 20 feet deep, depending on soil conditions. For the larger angle or dead-end structures, foundations could be up to 30 or more feet deep, depending on soil conditions. Each foundation would extend above the ground line between six inches and four feet. In extremely sandy soils, soil stabilization by water or a gelling agent may occur before excavation, and steel casings may be used for the excavation. Excavated material would be spread around the tower site.

Following excavation of the foundation holes, each footing would be constructed by placing formwork, reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Reinforcing steel cages would be assembled at laydown yards and delivered to each structure location by flatbed truck. Spoil material would be spread around the tower site and used for fill where suitable. The foundation excavation and installation would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks. Typical suspension structures would require approximately 25 to 40 cubic yards of concrete, and dead-end structures would require approximately 120 cubic yards of concrete.

Tower Assembly and Installation

The size of the work areas for structures (assembly and installation sites) would be approximately 40,000 to 50,000 square feet (1 acre = 43,560 ft^2) depending on terrain. The location of these sites has not yet been determined, but exact locations would be identified within the COM Plan and POD prior to a Notice to Proceed from the agencies. Lattice towers would be assembled at each site, installed, and bolted to the foundations. Bundles of steel members and associated parts would be transported to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight on the ground. Assembly would be facilitated with a small rough-terrain crane. The assembled subsections would be erected into place by a large crane and then fastened together in the air to form a complete tower. See Figure 2-14 for an illustration of typical tower assembly and installation activities.

FIGURE 2-14. TYPICAL TOWER ASSEMBLY AND INSTALLATION ACTIVITIES


TYPICAL TOWER ASSEMBLY & INSTALLATION
STRUCTURE ASSEMBLY & ERECTION
ASSEMBLY SITE
FOUNDATION INSTALLATION
BLADE WHERE NECESSARY
DISCLAIMER: FIGURE NOT TO SCALE

Conductor Installation

After the towers are installed, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. Sheaves are rollers that are temporarily attached to the lower end of the insulators to allow the conductor to be pulled, or "strung," along the line.

For public protection during wire installation, temporary guard structures would be built next to highways, railroads, power lines, structures, and other major obstacles. Guard structures would consist of H-frame poles placed on either side of an obstacle. These structures would prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for installing guard structures would include augers, line trucks, pole trailers, and cranes. A guard structure would be anticipated to be necessary every five miles. The amount of ground disturbance would typically be 200 feet by 300 feet. The guard structures would be left in place until conductors and ground wires were strung, tensioned, and clipped; this time frame would be approximately three weeks or longer depending on conditions. Guard structures may not be necessary for small roads. In such cases, other safety measures, such as barriers, flagmen, or other traffic control, would be used.

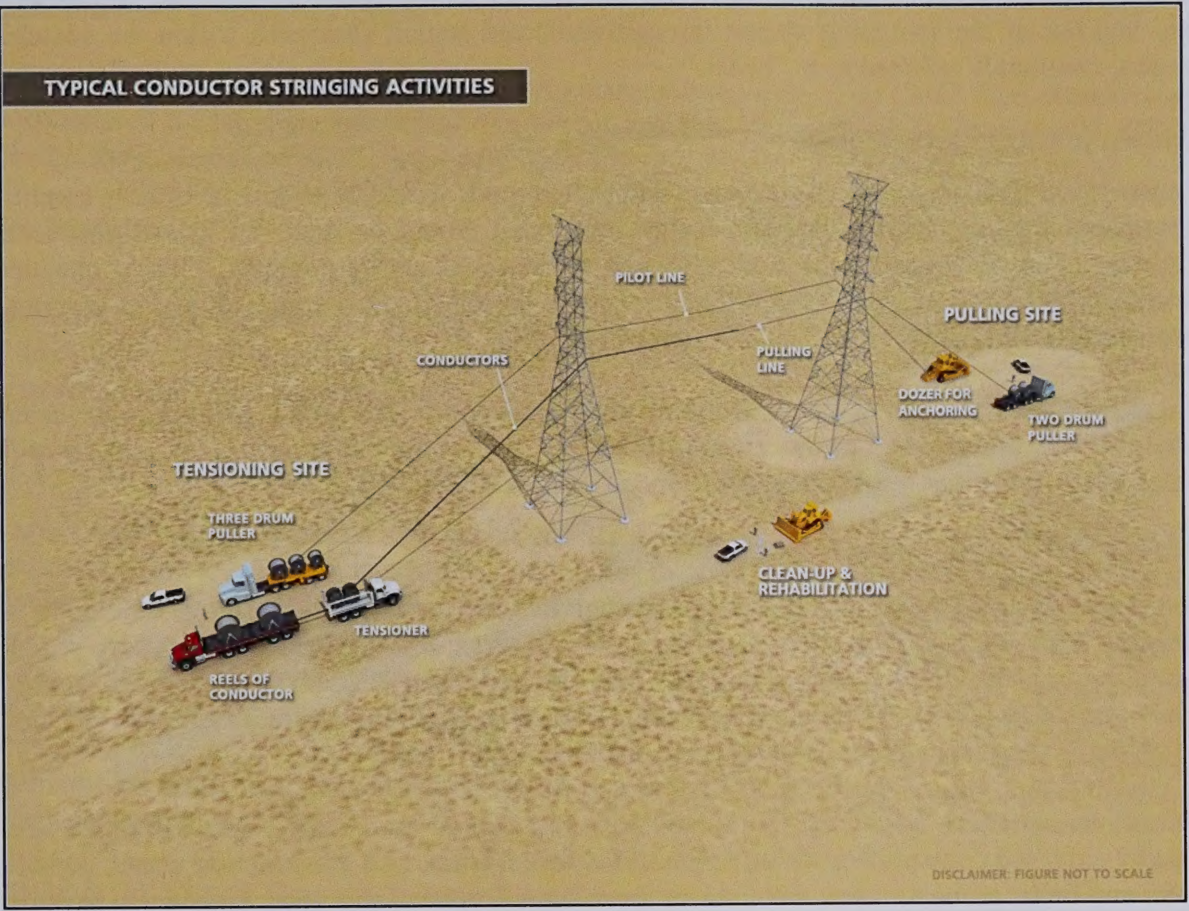
Pilot lines would be pulled (strung) from tower to tower by a helicopter and threaded through the stringing sheaves at each tower. The pilot line is used to pull in a larger-diameter, stronger pulling line for the conductor, and can also be used to pull in the ground wire. The larger-diameter, stronger line—pulling line—would be attached to the conductors to pull them onto towers. This process would be repeated until the ground wire or conductor is pulled through all sheaves. Bundled conductors would be pulled together with the assistance of a running board. The running board attaches the bundled conductor to the pulling line.

Ground wire and conductors would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment as shown on Figure 2-15. Sites for tensioning equipment and pulling equipment would be approximately 2.5 miles apart.

To the greatest extent practical, pulling and tensioning sites would be within the transmission ROW. However, some pulling and tensioning sites may occur outside the ROW. The tensioning and pulling sites could be as large as 200 feet by 500 feet, but they would be limited in size depending on each specific location and what is reasonable for safe construction practices. The size of each site would be limited as much as possible and would be designed in coordination with the responsible property owner or land management agency. Depending on topography, some grading may be required at pulling and tensioning sites to create level pads for equipment. Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be at the tensioning sites. A puller, line trucks, sag cat, and tractors would be needed for pulling and temporarily anchoring the ground wire and conductor. Table 2-7 includes ground disturbance estimates for conductor installation (helicopter fly yards, portable helicopter landing pads, pulling and stringing sites, and sleeving and stringing operations).

After installing the conductor ground wire or fiber optic shield wire, sagging, clipping, and dead-ending activities, terminating the conductors at dead-end structures, would be performed. This process would involve adjusting the position of the conductors and shield wires, removing stringing sheaves, and permanently attaching the conductor to the insulators with specialized hardware. FAA requirements may necessitate the installation of spherical markers, or similar type marker balls, for obstruction marking on some conductor spans. This would occur in locations where potential aircraft flight obstruction could be caused by conductors located over 200 feet above ground level. While specific locations of required markers cannot be determined prior to final design, obstruction marking for aircraft safety is expected to occur in only limited locations on conductor spans over major drainages or canyons. Installation of spherical markers would occur either prior to conductor installation or by lift or helicopter installation after conductor installation. Based on preliminary design, no transmission line towers are expected to exceed 200 feet in height or trigger requirements for obstruction marking or lighting.

FIGURE 2-15. TYPICAL CONDUCTOR STRINGING ACTIVITIES


TYPICAL CONDUCTOR STRINGING ACTIVITIES
PILOT LINE
PULLING SITE
CONDUCTORS
PULLING LINE
DOZER FOR ANCHORING
TWO DRUM PULLER
TENSIONING SITE
THREE DRUM PULLER
CLEAN-UP & REHABILITATION
TENSIONER
REELS OF CONDUCTOR
DISCLAIMER: FIGURE NOT TO SCALE

Counterpoise Installation and Grounding Practices

Part of standard construction practice prior to wire installation would involve measuring the resistance of tower footings and installation of counterpoise (grounds) as needed. To determine if a tower would require counterpoise, ground resistance measurements would be taken at towers sites after the installation of the foundations and structures. The measurements would be evaluated to determine the numbers and locations of structures requiring counterpoise. If the resistance to remote earth for each transmission tower is greater than 10 ohms, counterpoise (grounds) would be installed to lower the resistance to 10 ohms or less. Counterpoise would consist of a bare copper-clad or galvanized steel cable buried a minimum of 12 inches deep, extending horizontally from one or more tower legs for approximately 200 feet. Typical counterpoise installation would include two installations per structure on opposite tower legs. Four installations per tower could be required in certain circumstances.

In addition to counterpoise installation, standard grounding practices during construction would include both temporary and permanent grounding of equipment and structures, such as fences or pipelines, as necessary to reduce any potential magnetically induced voltages to harmless levels. Such practices could include electrical isolation of equipment or structures and the installation of grounding wires.

Switching Station Tie-in

At the proposed Haskell Canyon Switching Station, the transmission lines would be connected into and out of the switching station through dedicated station structures within the switching station, commonly referred to as "buses."

Upkeep of Construction Sites

Construction sites, material storage yards, and access roads would be kept in an orderly condition throughout the construction period. Refuse and trash would be removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped. Oils or chemicals would be hauled to a disposal facility authorized to accept such materials. No open burning of construction trash would occur without agency approval.

Microtrash would be cleaned daily from all work areas within known California condor habitat. Microtrash is a term used to describe small bits of debris like bottle caps, rags, screws, bolts, wires, glass, and other refuse materials found in condor habitat.

Hazardous Materials within the Project Area

Petroleum products, such as gasoline, diesel fuel, helicopter fuel, crankcase oil, lubricants, and cleaning solvents, would be present within the Project area during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment. These products would be containerized in fuel trucks or approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents.

Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be removed to a disposal facility authorized to accept such materials.

All construction, operation, maintenance, and decommissioning activities would comply with all applicable federal, State, and local laws and regulations regarding the use of hazardous substances.

The construction or maintenance crew foreman would ensure that all applicable laws are obeyed. In addition, an on-site inspector would be present during construction to make sure that all hazardous materials are used and stored properly. A health and safety plan would be developed as part of the COM Plan and POD during the engineering and preconstruction phase of the Project.

Site Reclamation

The ROW, including temporary construction sites, and any temporary ground disturbance outside of the ROW that may have been caused during or due to the construction of the Project (e.g., temporary access roads, staging sites, and assembly yards) would be restored as required by the property owner or land management agency. All practical means would be used to restore the land to its original contour and to restore natural drainage patterns along the ROW. Because revegetation would be difficult in many areas of the Project, disturbance would be minimized during construction. All practical means would be used to increase the chances of vegetation reestablishment in disturbed areas.

The total construction period would be approximately two years. The COM Plan, which would be completed during the engineering and preconstruction phase of the Project, would address specific site reclamation of all disturbed areas.

Fire Protection

A Fire Management Plan would be developed for the Project, and all applicable fire laws and regulations would be observed during the construction period. All personnel would be advised of their responsibilities under the applicable fire laws and regulations, including taking practical measures to report and suppress fires.

2.4.3 THREE-CIRCUIT TOWER MITIGATION

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is adopting mitigation to construct three-circuit towers within the existing ROW to carry the existing BR-RIN circuit and the two proposed Barren Ridge to Haskell Canyon (BR-HC) circuits. This would reduce various impacts, as discussed in Chapter 4 of this Final EIS/EIR, including adverse wildfire and fuels impacts and the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6) and Elizabeth Lake and Green Valley (milepost 44.6 to 51.7). Refer to Figure 2-16 for an illustration of three-circuit tower types, and to Figure 2-17, the Three-Circuit Tower Mitigation Map, for proposed locations.

FIGURE 2-16. THREE-CIRCUIT TOWER TYPES

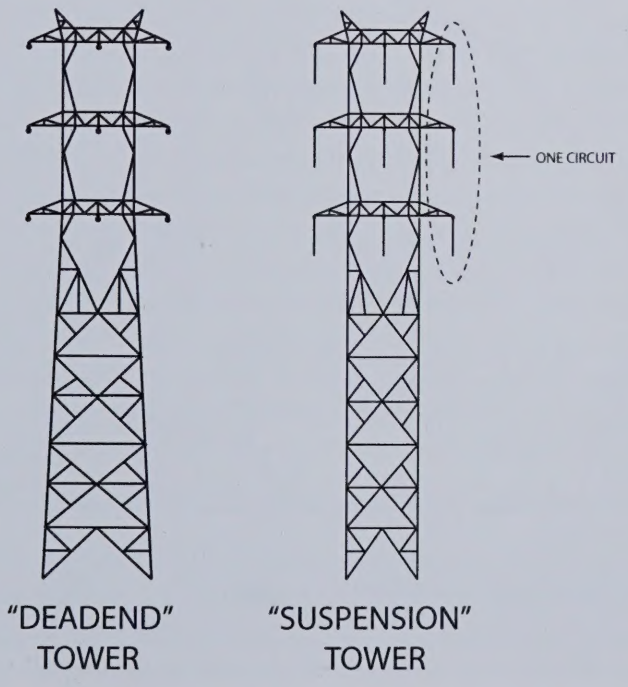
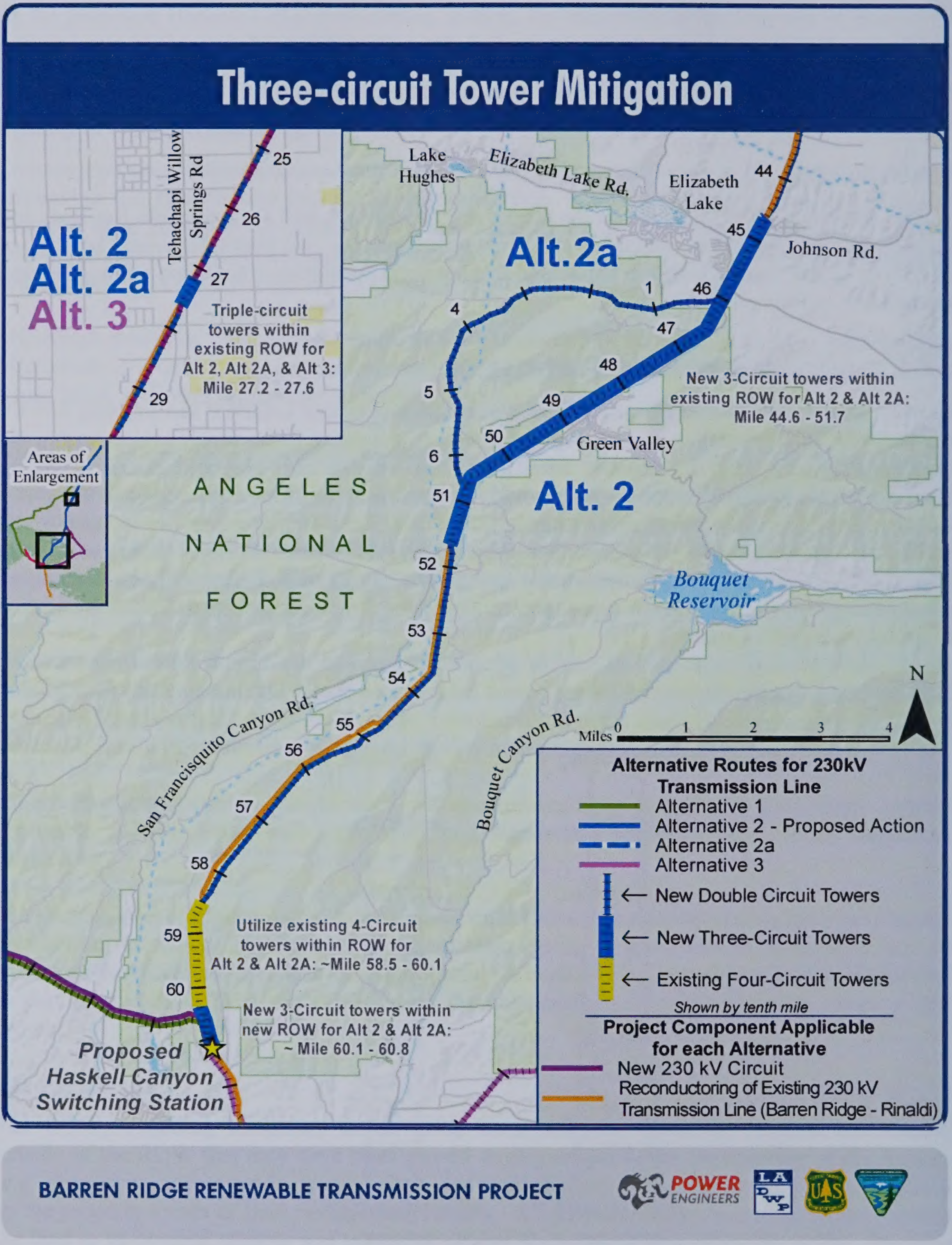


FIGURE 2-17. THREE-CIRCUIT TOWER MITIGATION


Three-circuit Tower Mitigation
Alt. 2
Alt. 2a
Alt. 3
Tehachapi Willow Springs Rd
25
26
27
29
Triple-circuit towers within existing ROW for Alt 2, Alt 2A, & Alt 3: Mile 27.2 - 27.6
Areas of Enlargement
Lake Hughes
Elizabeth Lake Rd.
Elizabeth Lake
Johnson Rd.
Alt.2a
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
1
4
5
6
New 3-Circuit towers within existing ROW for Alt 2 & Alt 2A: Mile 44.6 - 51.7
Green Valley
Alt. 2
ANGELES NATIONAL FOREST
Bouquet Reservoir
San Francisquito Canyon Rd.
Bouquet Canyon Rd.
N
Miles 0 1 2 3 4
Utilize existing 4-Circuit towers within ROW for Alt 2 & Alt 2A: ~Mile 58.5 - 60.1
New 3-Circuit towers within new ROW for Alt 2 & Alt 2A: ~ Mile 60.1 - 60.8
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
← New Double Circuit Towers
← New Three-Circuit Towers
← Existing Four-Circuit Towers
Shown by tenth mile
Project Component Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

LADWP must maintain the electrical service along the existing BR-RIN transmission line to avoid impacts to the hydroelectric power plants north of the Barren Ridge Switching Station. Therefore, a temporary transmission line would be constructed to keep the BR-RIN circuit energized during construction of the three-circuit towers. After the temporary line is constructed, the existing BR-RIN single-circuit towers would be removed to allow the new three-circuit towers to be constructed within the existing ROW. Once construction of the three-circuit towers is completed, the temporary transmission line would be removed.

The temporary transmission line would be 7.5 miles long and would consist of wood and steel single poles with an average height of 95 feet, a 3-foot by 3-foot footprint, and an average of eight poles per mile. Construction would occur within a temporary 80- to 100-foot ROW. Refer to Table 2-6 for specifications and to Table 2-7 for ground disturbance estimates. The majority of the temporary transmission line would be constructed along San Francisquito Road. Portions would also be constructed along Elizabeth Lake Road and Johnson Road. Pole placement would be adjacent to public roadways wherever possible. If necessary, temporary ROW on private property would be needed where poles could not be placed within public road ROW. The majority of poles would be direct-embedded when set in place and would not require a permanent foundation. Where additional strength is necessary at larger angle points, steel poles would be required, which could require an excavation approximately 6 feet in diameter by 20 feet deep to accommodate the concrete pier foundation that would be cast in place. Once all the poles have been constructed and the conductor installed, the existing BR-RIN circuit would be connected into the temporary line and energized. The construction would require establishment of a staging area, work areas around poles, and pull and tension sites. Access to pole sites and pull and tension sites would be from the adjacent roadways.

Approximately seven miles of the existing BR-RIN single-circuit towers would be removed, with existing ROW utilized to access the existing towers. The new three-circuit towers would be placed within the existing ROW, utilizing existing access roads (refer to Figure 2-8, Cross Section E, for a representation of the proposed ROW). Helicopter Mitigation, as described in this section below, would be applied in steeper terrain crossing the Angeles National Forest if additional access is required. If additional access roads, considered to be longer than 300 feet, are necessary, specific locations and construction method (either helicopter or conventional) would be coordinated with the USFS. The new three-circuit tower would require a 25-foot by 30-foot structure footprint and an average of seven structures per mile; the average structure height would be 170 feet, with a maximum tower-to-tower span length of 780 feet. Within the limits of standard tower design, new structures would be installed in the same locations as the existing BR-RIN structures. However, additional towers may be required due to design requirements. As such, towers may be placed in locations where there are currently no towers. Refer to Table 2-6 for specifications and to Table 2-7 for ground disturbance estimates for the Three-Circuit Mitigation. The construction process for the new three-circuit towers would be the same as the double-circuit towers discussed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work area land disturbances would be restored as close to previous conditions as possible and revegetated as required.

Utilization of the temporary transmission line was determined by LADWP to be the only feasible method to construct the Three-Circuit Tower Mitigation. Without the temporary line, a lengthy outage of the existing BR-RIN line would be required for the duration of the demolition of the existing towers and installation of the new three-circuit towers. Such an outage would require LADWP to shut down existing hydroelectric and wind energy plants in the Owens Valley, as LADWP would have no alternative means to transmit the energy to the Los Angeles basin. The loss of these sources of renewable energy would need to be compensated for by the increased utilization of non-renewable energy sources, and LADWP's achievement of renewable energy goals would be impacted.

TABLE 2-6. THREE-CIRCUIT TOWER SPECIFICATIONS

Tower Placement Details	Specifications	
	Triple-Circuit	Temporary Transmission Line
ROW acquisition	None (within existing)	80-100 feet
Structures per Mile	7	8
Average span length	750 feet	650 feet
Average height (feet) Ground to lowest attachment	120	60
Upper body height	50	45
Overall tower height	170	105
Typical range of heights of new towers	150 - 180 feet	95 - 105 feet

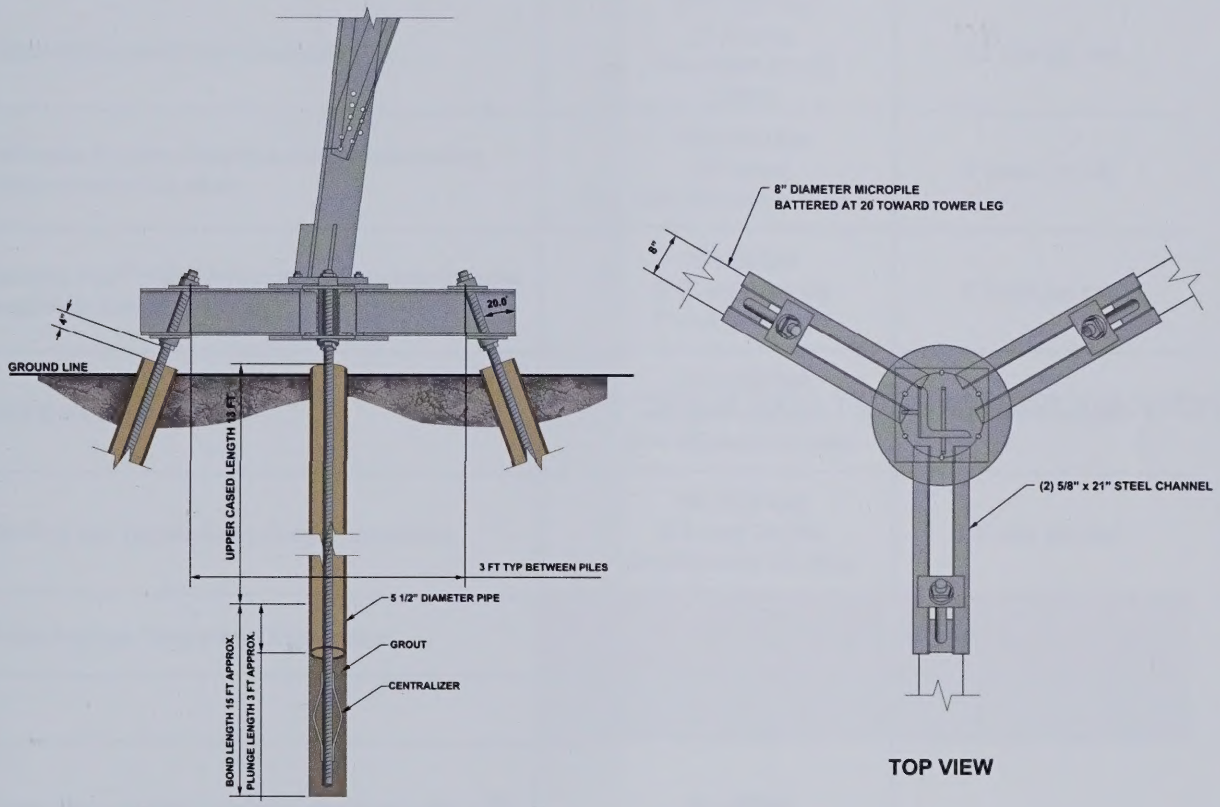
2.4.4 HELICOPTER MITIGATION

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500, Bell 212, or Sikorsky Skycrane). Although no specific locations for this mitigation have been identified for this Alternative, USFS is expected to require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas and associated temporary access roads, tower structure vegetation clearing, guard structures at major crossings, and access road pullouts. Refer to Table 2-7 for ground disturbance estimates for the Helicopter Mitigation.

The transmission line materials (tower steel, conductor reels, structure hardware, etc.) would be delivered by truck to the helicopter fly yards/staging areas. Vegetation clearing may be required at these sites to ensure safe working conditions. The fly yards/staging areas would serve as helicopter support yards for fueling and maintenance, as well as for the transport of materials and personnel. Towers may also be assembled in sections at these yards prior to delivery to the tower sites. Heavy lift helicopters would then fly the towers from the yards to the tower sites.

Portable landing pads would be at each tower site. These pads would allow helicopters to load and unload personnel, tools, and equipment necessary for construction of foundations and assembly of tower structures. Helicopter-constructed towers that would not be close to existing access roads would utilize micropile foundations. For each tower leg, micropile foundations would use a group of three to eight 6- to 9-inch diameter casings that would be drilled and grouted into the ground. The exposed portion of the pile group would be encased in a reinforced concrete cap from the top of the casings to a depth anywhere from one to eight feet below the ground surface, depending on the terrain. Figure 2-18 illustrates the plan view and sections of a micropile foundation.

FIGURE 2-18. MICROPILE FOUNDATION


4"
20.0°
GROUND LINE
UPPER CASED LENGTH 13 FT
3 FT TYP BETWEEN PILES
5 1/2" DIAMETER PIPE
GROUT
CENTRALIZER
BOND LENGTH 15 FT APPROX.
PLUNGE LENGTH 3 FT APPROX.
8" DIAMETER MICROPILE
BATTERED AT 20 TOWARD TOWER LEG
8"
(2) 5/8" x 21" STEEL CHANNEL

LATTICE TOWER LEG SUPPORT

TOP VIEW

Conductor installation would proceed as for double-circuit tower installation. The equipment necessary for conductor installation would be large, heavy construction equipment that could only be brought in by truck. Some NFS roads could need maintenance or improvement to allow pulling and tensioning, but no new access or spur roads would be created for conductor installation on the helicopter-constructed towers.

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TABLE 2-7 GROUND DISTURBANCE ESTIMATES FOR THE PROPOSED 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Disturbance Description	Double-Circuit Steel Lattice Towers with Helicopter Stringing		Three-Circuit Tower Mitigation (Three-Circuit Steel Lattice Towers with Helicopter Stringing)				Helicopter Mitigation (Steel Lattice Towers with Helicopter Installation of Towers and Stringing)	
			Three-Circuit		Temporary Transmission Line			
	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance	Estimated Disturbance Dimension	Average Disturbance
	Temporary Disturbance During Installation							
Tower installation	200 x 200 feet (0.9 acre) per tower ±5 towers per mile[1]	4.6 acres per mile	200 x 200 feet (0.9 acre) per tower ±7 towers per mile	6.4 acres per mile	50 X 100 feet (0.1 acre) per tower ±8 towers per mile	0.9 acre per mile	100 x 100 feet (0.2 acre) per tower ±5 towers per mile	1 acre per mile
Guard structures at major crossings	200 x 300 feet (1.4 acres) One crossing every 5 miles	0.3 acre per mile	200 x 300 feet (1.4 acres) One crossing every 5 miles	0.3 acre per mile	40 X 100 feet (0.09 acres) One crossing every 5 miles	0.02 acre per mile	200 x 300 feet (1.3 acres) One crossing every 5 miles	0.3 acre per mile
Helicopter fly yards / staging areas (includes fueling station at one of the sites)	200 x 200 feet (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 feet (0.9 acre) One site every 5 miles	0.2 acre per mile	200 x 200 feet (0.9 acre) One site every 5 miles	0.2 acre per mile	650 x 650 feet (10 acres) One site every 5 miles	2 acres per mile
Landing area/Portable helicopter landing pads (includes vegetation clearing for site)	50 x 50 feet (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 feet (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 feet (0.06 acre) per site One site every 3.5 miles	0.02 acre per mile	50 x 50 feet (0.06 acre) per site Five sites per mile	0.3 acre per mile
Pulling and tensioning sites	200 x 500 feet (2.3 acres) per site One site every 2.5 miles[2]	0.9 acre per mile	200 x 500 feet (2.3 acres) per site One site every 2.5 miles	0.9 acre per mile	200 x 500 feet (2.3 acres) per site One site every 2.5 miles	0.9 acre per mile	200 x 500 feet (2.3 acres) per site One site every 2.5 miles	0.9 acre per mile
Sleeving and miscellaneous stringing operations	100 x 200 feet (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	100 x 200 feet (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile	50 x 100 feet (0.1 acres) per site One site every 2.5 miles	0.05 acre per mile	100 x 200 feet (0.5 acre) per site One site every 2.5 miles	0.2 acre per mile
Total Average Temporary Disturbance[3]	**6.2 acres per mile**		**8 acres per mile**		**2.1 acres per mile**		**3.7 acres per mile**	
	Permanent Disturbance							
Tower sites, including vegetation clearance within a 10-foot radius around base of towers in accordance with state law	60 X 60 feet (0.08 acre) ±5 towers per mile	0.2 acre per mile	45 x 50 feet (0.05 acre) ±7 towers per mile	0.14 acre per mile	N/A	N/A	60 x 60 feet (0.08 acre) ±5 towers per mile	0.2 acre per mile
Total Average Permanent Disturbance[4]	**0.2 acre per mile**		**0.14 acre per mile**		**N/A**		**0.2 acre per mile**	

Information based on LADWP and POWER Engineers, Inc. estimates. Actual disturbance areas may be smaller based on final engineering design.

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[1] For slopes over 10% (ground disturbance categories 4-6), site dimensions would be 200 x 250 feet (1.2 acres) and have an average disturbance of 5.8 acres per mile.
[2] For slopes over 10% (ground disturbance categories 4-6), sites would be every 2 miles and have an average disturbance of 1.2 acres per mile.
[3] Access and spur road disturbances included in Table 2-4.
[4] Ibid

2.4.5 BRRTP GENERAL PRACTICES

LADWP would commit to the application of BRRTP General Practices (GPs) on a Project-wide basis. LADWP would incorporate these design features, measures, and procedures to avoid or reduce impacts from Project construction or operation. The GPs are considered a commitment by LADWP, and implementation of each GP would be monitored by the Lead Agencies if the Proposed Action or an Alternative were approved. GPs that would be integrated into Project construction and operations processes are listed in the table below. These GPs would also be incorporated into BLM and USFS authorizations.

TABLE 2-8. BRRTP GENERAL PRACTICES

General Practice	Description
	Plans
GP-1	**Plan of Development & Construction, Operation and Maintenance Plans.** In consultation with the Forest Service and BLM Authorizing Officers prior to construction, LADWP shall develop a Construction, Operation and Maintenance Plan (COM Plan) with the Forest Service and Plan of Development (POD) with BLM. These plans shall be attached to and become a part of the Special Use and Right-of-Way Authorizations. The COM Plan and POD shall include, at a minimum, road maintenance specifications, vegetation treatment and rehabilitation specifications, and conditions on maintenance and replacement of improvements. The agencies may combine the POD and COM plans into a single document for the Project.
GP-2	**Traffic Control Plan.** Prior to the start of construction, LADWP shall submit a Traffic Control Plan (TCP) to agencies with jurisdiction over public roads that would be directly affected by construction activities (where road closures or encroachments would be necessary). The Plan shall define the locations of all roads that would need to be temporarily closed due to construction activities, and also define the use of flag persons, warning signs, lights, barricades, cones, etc. for each construction closure. The plan shall include measures to avoid disruptions or delays in access for emergency service vehicles and to keep emergency service agencies informed of road closures, detours, and delays. Police departments, fire departments, ambulance services, and paramedic services shall be notified in advance of each closure by LADWP. The Plan shall also include contact information for those agencies, assign responsibility for notifying the service providers, and specify coordination procedures. Copies of the Plan shall be provided to all affected police departments, fire departments, ambulance and paramedic services.
GP-3	**Hazardous Materials/Waste Management Plan.** A project-specific hazardous materials management and hazardous waste management program will be developed prior to initiation of the project. The program will outline proper hazardous materials use, storage and disposal requirements as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during the project and the types of wastes that will be generated. All project personnel will be provided with project-specific training. This program will be developed to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Employees handling wastes will receive hazardous materials training and shall be trained in hazardous waste procedures, spill contingencies, waste minimization procedures and Treatment, Storage and Disposal Facility (TSDF) training in accordance with OSHA Hazard Communication Standard and 22 CCR. If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), it shall be excavated, tested, and disposed of in accordance with state hazardous waste disposal requirements. The Plan shall also include procedures detailing emergency responses to releases of hazardous materials. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, regardless of the quantity spilled, will be immediately reported to the appropriate agency as outlined in the Plan if the spill has entered a navigable water, stream, lake, wetland, or storm drain, if the spill impacted any sensitive area including conservation areas and wildlife preserves,

General Practice	Description
	or if the spill caused injury to a person or threatens injury to public health. All construction personnel, including environmental monitors, will be aware of state and federal emergency response reporting guidelines.
GP-4	**Health and Safety Plan**. A Health and Safety Plan shall be prepared and implemented. The Plan shall address emergency medical services available on-site and within the project area. The Plan shall also address specific emergency response and evacuation measures.
GP-5	**Stormwater Pollution Prevention Plan.** A project-specific Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented prior to the start of construction. The SWPPP will utilize Best Management Practices (BMPs) to address the storage and handling of hazardous materials and sediment runoff during construction activities.
GP-6	**Spill Prevention, Countermeasure, and Control Plan.** LADWP will prepare or update existing Spill Prevention, Countermeasure, and Control Plan (SPCC Plan) for proposed and/or expanded switching stations if necessary or required by EPA guidelines. The plans will include engineered and operational methods for preventing, containing, and controlling potential fluid releases, and provisions for quick and safe cleanup.
GP-7	**Soil Management Plan.** A Soil Management Plan will be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. The plan will include practices that are consistent with California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as appropriate remediation standards that are protective of the planned use. The Plan will provide guidelines for identification of impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal. In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled. The appropriate Certified Unified Program Agency (CUPA) will determine whether further assessment is warranted.
GP-8	**Avian Protection Plan.** An Avian Protection Plan (APP) shall be developed and implemented for the construction and operation of the Project. The APP will outline measures and protocols that will be undertaken to protect avian species and is intended to protect local and migratory bird species that may occur within the Project area.
	Design
GP-9	A "dulled" metal finish shall be used on new towers or rebuilt portions of existing towers to reduce visual impacts except where otherwise dictated by visual mitigation measures.
GP-10	Nonspecular conductors shall be used to reduce visual impacts.
GP-11	Project features will be placed so as to avoid sensitive features including, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This will minimize the amount of sensitive features disturbed and/or reduce visual contrast.
GP-12	Drainage control features will be installed, as appropriate, to minimize the amount of stormwater flow from areas of active construction. Details would be described in the SWPPP.
	Construction Vehicles/Equipment
GP-13	Only clean-burning on-road and off-road diesel engines shall be used. Where feasible, heavy-duty diesel powered construction equipment manufactured after 1996 (with federally mandated "clean" diesel engines) shall be used.
GP-14	Construction workers shall carpool to and from the construction site when possible.
GP-15	All trucks hauling soils or other loose materials shall be covered, or maintain at least two feet of freeboard (distance between the material and the top of the truck).
GP-16	Where visible soil material is carried onto adjacent public streets, the affected streets shall be cleaned daily with water sweepers.
GP-17	All vehicles and equipment operating within 100 feet of an active stream will be inspected daily to ensure they are free of any leaks of fuel, cooling, or lubricating fluids.
GP-18	All construction vehicles shall maintain a hazardous materials spill kit, which shall include absorbent materials, tarps, small storage containers or waterproof bags, and latex gloves. Field personnel shall be made aware of these kits and instructed on how to use them.

General Practice	Description
GP-19	Refueling, or addition or changing of oil and other fluids for equipment and heavy machinery shall be performed only at approved staging and construction yards. Staging and construction yards will be located on upland sites and spill containment measures will be used to minimize risk of spill or drainage into waterways. Oil and other fluids will be disposed of as required by California law. Emergency refueling, or emergency addition or changing of oil or other fluids shall not be performed within 500 feet of natural stream channels or wetlands.
GP-20	Helicopters utilized for construction will be refueled at helicopter staging areas or local airports. Procedures will include the use of drop cloths made of plastic and drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling areas will be located in designated areas where absorbent pads and trays are available.
GP-21	LADWP shall contact Angeles National Forest (ANF) dispatch seven days prior to helicopter use and shall provide ANF with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that will be used while working on National Forest System (NFS) lands at any given time, and the flight pattern of helicopters used on NFS lands. If a wildfire occurs in the Project area, upon contact from the Forest Aviation Officer, helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until the Forest Aviation Officer provides clearance.
GP-22	The Applicant shall clear brush and dead and decaying vegetation that would pose a fire hazard from the work area prior to starting construction and/or maintenance work. The work area includes areas of construction (e.g., tower sites, switching station site) within the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. Cleared vegetation shall either be removed or chipped and spread onsite in piles no higher than six inches. This will be determined in consultation with individual appropriate land management agencies.
	Access Roads
GP-23	The alignment of any new access roads or overland routes shall follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values.
GP-24	To the extent practical, any re-grading of access roads shall be the minimum necessary to provide safe access of construction equipment, and erosion control measures.
GP-25	Construction vehicles shall use paved roads to access the construction site when available.
GP-26	The design and use of roadways or access trails within the ANF shall be coordinated with the District and Forest Supervisor's office. The ANF may specify conditions under which use of the Forest system roads and lands shall be permitted. These conditions may include restoring or blocking access at some service trails and repairing any roadway damage or erosion damage caused by construction activities or traffic. Any project-related damage to existing Forest system roads shall be repaired at LADWP's cost.
GP-27	Any construction or installation work requiring the crossing of a roadway or railway right-of-way would incorporate the use of guard poles, netting, or similar means to protect moving traffic and structures from the activity. If necessary on state highways, continuous traffic breaks would be planned and provided.
GP-28	To minimize traffic congestion and delays during construction to the extent feasible, LADWP shall restrict all necessary lane closures or obstructions on major roadways associated with Project construction activities to off-peak periods, as feasible. Lane closures should be avoided during the 6:00 a.m. to 9:00 a.m. timeframe and the 3:30 p.m. to 6:30 p.m. timeframe, or as otherwise defined within the TCPs.
GP-29	Where Project construction and/or maintenance access could close one or multiple lanes, and where significant degradations in roadway operations could result, roadway diversions should be provided to restore the travel lanes through temporary roadway restriping.
GP-30	Where Project construction and/or maintenance access could close bicycle lanes or trails, temporary diversions should be provided where feasible to provide continued access around the construction or maintenance area.
GP-31	Where Project construction and/or maintenance access could cut-off access to nearby recreation areas, and where no alternate route exists to the recreation areas, measures should be used to provide a minimum of one lane reversible access (with flagmen) through the construction/maintenance area, or work should only be conducted during off-peak hours or evening hours only.
GP-32	Any damage to local paved roadways caused by Project construction and/or maintenance should be repaired and the roadways should be restored to their previous condition.

General Practice	Description
GP-33	In areas where soils and vegetation are particularly sensitive to disturbance, existing access roads would be repaired only in areas where they are otherwise impassable or unsafe.
	Construction Areas
GP-34	Construction activities shall be limited to the designated right-of-way and approved access and work areas as identified in the ROD and POD. Any deviations from the approved areas must be cleared with the jurisdictional agency and/or landowner.
GP-35	Grading areas shall be clearly marked and no equipment or vehicles shall disturb slopes or drainages outside of the grading area.
GP-36	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits.
GP-37	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration shall occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding, installing cross drains for erosion control as necessary, placing water bars in the road as necessary, and filling ditches.
GP-38	Soil excavated from construction activities shall not be left at work areas where the slopes exceed 10 percent or where the work area is within 100 feet of a natural stream or waterbody (receiving water). In these situations, loose soil shall be used elsewhere within the immediate area or stockpiled at the staging area. Stockpiled soil shall be managed as required by the SWPPP. No stockpiling or spreading of soil or other materials shall occur within stream channels.
GP-39	During grading or excavation work for the Project, the contractor shall observe the exposed soil for visual evidence of contamination. If visual contamination indicators are observed during construction, the contractor shall stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. The contractor shall document the exact location of the contamination and shall immediately notify a designated Environmental Monitor and propose actions for addressing the contamination in accordance with the Soil Management Plan.
GP-40	Existing watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) will be repaired or replaced, if they are damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
GP-41	Allow natural vegetation to reoccur on temporarily disturbed areas following the completion of construction.
GP-42	Weed control measures on non-federal lands shall be implemented as determined in consultation with CDFG and the Counties of Los Angeles and Kern Agricultural Commissions.
GP-43	Every effort will be made to minimize vegetation removal and permanent loss at construction sites. Native vegetation will be flagged for protection or stockpiled for recontouring use at the discretion of the Biological Monitor and the Construction Supervisor.
GP-44	In construction areas where recontouring is not required, vegetation will be left in place wherever possible and the original contour will be maintained to avoid excessive root damage and allow for resprouting. Disturbance will be limited to overland driving where feasible to minimize changes in the original contours.
GP-45	Use of heavy equipment within a flowing channel will be avoided if possible; however, should it be necessary, the Environmental Monitor will be notified prior to initiation of construction activities to allow adequate time for site visits and surveys, if necessary.
GP-46	Asphalt or cement equipment will not be rinsed in, nor excess products deposited into any stream or other waterway. Asphalt or concrete effluent will not be allowed to enter into stream or RCA. Effluent will be removed from standing water and prevented from entering a waterway.
GP-47	Fill material, including brush, loose soils, and other similar debris will not be deposited within a stream channel or on a stream bank.

General Practice	Description
	Surveys/Monitoring
GP-48	Biological Monitor. For areas identified as environmentally sensitive, such as streams, wetlands, riparian areas, and other environmentally sensitive areas, a biological monitor shall be present during ground disturbing construction activities. The qualified biologist shall conduct monitoring for any area subject to disturbance from construction activities that may impact biological resources. The biological monitor's duties include minimizing impacts to special-status species, native vegetation, wildlife habitat, and unique resources, as well as to identify potential issues or impacts to biological resources and report those to the authorized biologist. Where appropriate, the monitor will flag the boundaries of biologically sensitive areas and monitor any construction activities in these areas to ensure that ground disturbance activities and impacts occur within designated limits.
GP-49	Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) will be implemented to educate all construction personnel of the area's environmental conditions and the environmental protection measures that must be adhered to. An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of biological and cultural resources, and proper Best Management Practice (BMP) implementation, to all construction and maintenance personnel.
	Coordination/Permits
GP-50	Prior to construction, LADWP shall consult with all federal, state, and local agencies, including local agency consortiums, having jurisdiction over lands affected by the proposed Project's ROW and ancillary facilities to ensure that no permanent restrictions or preclusions of their land management practices occur.
GP-51	Construction activities shall be designed to minimize work on or use of local streets. In the event that local streets must be used for more than normal traffic purposes, an encroachment permit or similar authorization shall be obtained from the County (or other agency, as applicable). Any work requiring an encroachment permit shall include preparation of a traffic control plan or other management plan to minimize effects on local streets. Any damage to local streets will be repaired, and the street system will be restored.
GP-52	Consistent with Los Angeles County Code (Section 12.08.440), no construction activities shall occur in a residential area between 7:00 p.m. and 7:00 a.m. on weekdays and Saturdays, or at any time on Sundays or holidays. In the event that construction needs to occur outside the specified hours, a variance shall be obtained beforehand.
GP-53	Incorporate riparian area avoidance and permit measures. The following actions and all permit conditions detailed within the individual or Nationwide 404 permit and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). Before construction, qualified resource specialists would stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones would include a 10-foot buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities would be restricted from these zones, although essential vehicle operation and foot travel would be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities would be prohibited within the exclusion zone. In areas where riparian habitats are unavoidable, the construction manager in consultation with the lead environmental compliance inspector would narrow the width of the centerline to the maximum extent allowable. New spur roads and existing access road improvements would be constructed and implemented using methodology that preserves existing hydrology. Tower pad clearance would be minimized to the maximum extent allowable. All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities would be restored to ensure no net loss of habitat functions and values. Following construction activities, the areas would be restored as soon as practicable.
GP-54	Construction crews will avoid impacting the streambeds and banks of any streams along the route to the extent feasible. When construction or maintenance work affects the bed, bank or margins of a stream under CDFG jurisdiction, LADWP will notify CDFG as required under Fish and Game Code Section 1602, which may include securing a Streambed Alteration Agreement.
GP-55	Local emergency service providers shall be coordinated with to ensure that construction activity and any associated lane closures or traffic impacts will not significantly affect emergency response vehicles.

General Practice	Description
GP-56	LADWP would obtain appropriate Tree Removal Permits when necessary from the appropriate government agencies. In accordance with the obtained permits, LADWP shall avoid or minimize impacts to protected trees.
GP-57	LADWP shall obtain permits/approvals from any affected railway operators to ensure construction activities comply with each company's safety requirements and to avoid disruption to or congestion of rail traffic.
GP-58	LADWP shall coordinate with the City of Santa Clarita at least 30 days prior to construction in the service territory to reduce the potential interruption of bus transit services.
GP-59	All residences adjacent to the project area shall be notified at least seven days in advance of local construction of the construction schedule and the type and expected duration of local impacts, including air quality and noise impacts. The notice shall also include a phone number for construction noise questions.
Noise	
GP-60	Noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer shall be used on construction equipment.
GP-61	Temporary sound walls or acoustic blankets around stationary noise sources (e.g., generators, pumps) shall be installed to shield adjacent sensitive receptors. Where feasible, these sound walls or acoustic blankets shall have a height of no less than eight feet, a Sound Transmission Class (STC) of 27 or greater, and a surface with a solid face from top to bottom without any openings or cutouts.
GP-62	Unnecessary construction vehicle idling time shall be minimized (see also Mitigation Measure AIR-2D, Restrict diesel engine idling to 5 minutes). The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. A "common sense" approach to vehicle use shall be applied; if a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off. It should be noted that certain equipment, such as large diesel-powered vehicles, shall require extended idling for warm-up and repetitive construction tasks and would therefore not be subject to being shut off when not in use.

2.4.6 CONSTRUCTION WORK FORCE AND SCHEDULE

Construction of the BRRTP is anticipated to begin no sooner than late 2012, with a target in-service date of early 2015. These dates are subject to change based on actual completion of design.

The following construction estimates were based on preliminary engineering and the number of workers and construction duration values are estimates; therefore, they are subject to change based on final engineering and design. The new double-circuit 230 kV transmission line from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station would require 16.5 months and 134 workers. The installation of a 230 kV circuit on existing double-circuit towers from the Castaic Power Plant to the proposed Haskell Canyon Switching Station would require a month and a half and 35 workers. The upgrade and reconductoring of the existing BR-RIN would require nine months and 155 workers. The construction of a new 400-foot by 600-foot Haskell Canyon Switching Station would require 15.4 months and 63 workers. The expansion of the existing Barren Ridge Switching Station would require 15 months and 60 workers.

The BRRTP components are anticipated to be constructed in the staggered sequence illustrated below in Tables 2-9 and 2-10. The construction of all Project components would take approximately two years and 447 total workers, with 173 workers at the peak of construction. Table 2-10 summarizes the BRRTP's anticipated construction workforce and schedule based on the most current information available. To allow for any delays in the Project, three weeks of float time were included for the new 230 kV transmission line and reconductoring efforts, and an additional two weeks of float time were included for the stringing of the second circuit between Castaic Power Plant and Haskell Canyon.

TABLE 2-9. ANTICIPATED CONSTRUCTION SEQUENCE

PROJECT COMPONENT	ANTICIPATED CONSTRUCTION SEQUENCE
Expansion of Barren Ridge Switching Station	Weeks 8 – 73
New Haskell Canyon Switching Station	Weeks 1 – 67
New 230 kV Transmission Line	Weeks 42 – 113
Reconductor BR-RIN	Weeks 55 – 88
Addition of 230 kV Circuit	Weeks 51 – 56

TABLE 2-10. CONSTRUCTION WORKFORCE AND SCHEDULE

PROJECT COMPONENT	CONSTRUCTION (START AND END WEEKS)	CONSTRUCTION DURATION (MONTHS)	TOTAL # OF WORKERS	PEAK # OF WORKERS AT ANY GIVEN TIME
Expansion of Barren Ridge Switching Station	8 – 73	15	60	38
New Haskell Canyon Switching Station	1 – 67	15.4	63	38
New 230 kV Transmission Line	42 – 113	16.5	134	131
Reconductor BR-RIN	55 -88	9	155	120
Addition of 230 kV Circuit	51 – 56	1.5	35	35
ALL COMPONENTS	**Weeks 1 – 113**	**26.1 months**	**447 Total Workers**	**173* Peak Workers**

*The value represents the total for the staggered construction of the Project components; it is not reflective of the sum of all the components.

2.4.7 OPERATION AND MAINTENANCE OF BRRTP

Interconnection Process

The BRRTP must provide open access to the transmission system. As such, LADWP's process for approving generator interconnection to BRRTP would follow the FERC's approved Large Generator Interconnection Procedures (LGIP). Per FERC requirements, LADWP is required to treat all Interconnection Customers (IC) equally. While all current ICs of the BRRTP are either wind or solar projects, LADWP does not have the ability to preferentially treat renewable energy ICs over other non-renewable generators should they request interconnection. LADWP processes interconnection requests in the order received until all applications have been processed or facility capacity has been reached. If one project withdraws, the next queued request processed.

LADWP's LGIP consists of five sequential steps: application processing, technical scoping meeting, technical studies, interconnection agreement, and project implementation.

Application Processing

An application is deemed completed when an IC submits a complete application with the proposed point of interconnection (POI), proposed commercial operation day (COD), maximum expected output, facility technology, site diagram, single electric line diagram, application fee, and site control or in-lieu financial security.

Technical Scoping Meeting

A technical scoping meeting is held to ensure common understanding of the IC's project and of the LGIP. Also, in the technical scoping meeting, ICs and LADWP come to agreement on POI/alternate POI, COD, and generator size. LADWP advises what studies need to be conducted. After the technical meeting, the IC must provide confirmation on the POI, COD, and generator size.

Technical Studies

Technical studies assess the impact of the IC's project on the LADWP electric system and scope of capital improvements to ensure the safety, reliability, and integrity of the grid. There are three main studies that need to be completed for each interconnection request. The three studies are: Feasibility Study, System Impact Study, and Facilities Study. Each study requires the interconnection customer to execute a study agreement and submit the corresponding study fee to LADWP. Following the receipt of the executed agreement, LADWP executes the agreement, and the study can begin. When each study is completed, LADWP sends a study report to the IC and meets with the IC to review it.

Interconnection Agreement

After a draft Facilities Study report is provided to the IC, LADWP tenders the Interconnection Agreement (IA) to the IC. The IA is negotiated and agreed to by LADWP and the IC.

Project Implementation

Once LADWP and the IC execute the IA, LADWP and the IC begin designing, procuring, engineering, and constructing the electrical interconnection. LADWP engineers the capital improvements as agreed in the IA. The IC engineers the electrical system on the IC side. LADWP and the IC coordinate a parallel inspection and commissioning process to attain the planned COD. Prior to procurement, installation, or construction of LADWP's interconnection facilities/upgrades, the IC posts a form of security in the amount equal to the cost of LADWP's interconnection facilities/upgrades.

Facility Maintenance

Regular inspection and maintenance of overhead facilities is crucial for maintaining uniform, adequate, safe, and reliable service. The 230 kV transmission line would be inspected several times annually by both ground and air patrols. Maintenance would be performed as needed. When access would be required for non-emergency maintenance and repairs, LADWP would adhere to the same precautions and procedures that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damaged equipment or infrastructure. Crews would be instructed to protect crops, plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be similar to those prescribed for normal construction. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic. Details would be provided in the COM Plan and POD.

Vegetation Management

Vegetation management along the transmission line ROW would be required by the North American Reliability Council (NERC). In compliance with the NERC's Standard FAC-003-l, LADWP would prepare a Vegetation Management Plan for the BRRTP. The Vegetation Management Plan would be included in the COM Plan to be completed prior to the issuance of a Notice to Proceed from the USFS and BLM. Vegetation management would consist of routine tree trimming to maintain the required minimum 10-foot clearance from conductors to vegetation (California Public Resources Code [PRC] 4293); clearance of flammable brush vegetation within a 10-foot radius around the base of transmission line towers in accordance with California PRC 4292; and clearance immediately adjacent to access roads to permit adequate access to the facilities.

Access Road Maintenance

Ongoing access road maintenance would be conducted in accordance with existing or new road authorizations issued to LADWP. Access road maintenance consists of those activities necessary to allow continued access to the ROW and/or each tower structure. These activities may include grading, and maintenance of drainage systems, bridges, culverts, fences, gates, and signs. Motor graders, backhoes, dump trucks, and pickups are used to maintain access roads.

Permitted Uses

After the transmission line has been energized, land uses that are compatible with safety regulations (such as agriculture and grazing) would be permitted in and adjacent to the ROW. Incompatible land uses within the ROW include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect electrical clearances of existing or planned facilities.

Land uses on public lands that comply with local regulations would be permitted adjacent to or within the ROW, with approval from the appropriate agency. Permission to use the ROW on private lands would have to be obtained by LADWP.

Safety

Safety is a primary concern in the design of the 230 kV transmission line. The AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection would be provided by overhead ground wires along the line. Electrical equipment and fencing at the switching station would be grounded. All fences, metal gates, pipelines, and other metal components that cross or are within the transmission line ROW would be grounded to prevent electrical shock. If applicable, grounding outside of the ROW may also occur.

Decommissioning

At the end of the useful life of the proposed Project, if the facilities are no longer required, or if extension of the authorizations are not granted by federal land agencies at the time they expired, the transmission line would be decommissioned in accordance with applicable current rules and regulations. Conductors, insulators, and hardware would be dismantled and removed from the ROW. Tower structures would be removed and foundations broken off below ground surface. Project materials would be reused or recycled as possible.

If the line and associated ROW are abandoned at some future date, the ROW may be available for the same uses that existed prior to construction of the Project. Following decommissioning, any areas disturbed to dismantle the line would be restored and rehabilitated as near as possible to their original condition.

2.5 ALTERNATIVES ANALYZED IN THE EIS/EIR

After environmental review, preliminary electrical system studies, and public input, the BLM, USFS, and LADWP have identified four end-to-end routing alternatives for the proposed 230 kV double-circuit transmission line between Barren Ridge Switching Station and the proposed Haskell Canyon Switching Station, which were developed into the four action Alternatives for the Project. Descriptions of the five Project Alternatives, including the four action Alternatives and the No Action Alternative, follow in the sections below. These Alternatives were identified as the reasonable range of alternatives for the Project that would feasibly attain most of the basic objectives of the Project. In addition, CEQA requires the consideration of how to avoid or substantially lessen any of the significant or adverse effects of the Project.

2.5.1 NO ACTION ALTERNATIVE

NEPA Regulations (40 CFR 1502.14(d)) and CEQA Guidelines (Section 15126.6(e)) require the analysis of the No Action Alternative. Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. LADWP currently maintains an estimated 147 miles of existing access roads in the project area, 97 of which are within ANF. Current, on-going operation and maintenance activities for existing facilities in the Project area would continue. This Final EIS/EIR must address the resulting environmental effects from taking no action and compare it to the effects of permitting the Proposed Action or an Alternative to the Proposed Action. Potential environmental impacts of the No Action Alternative are presented in Chapter 4 of this Final EIS/EIR.

2.5.2 ACTION ALTERNATIVES

As described in Section 2.3.2, Alternatives Development Process, nine preliminary routing segments (Segments A through I) were identified for the new 230 kV double-circuit transmission line. Some of these Segments were adjusted or modified based on public input, preliminary environmental review, and preliminary electrical system studies. Segments E and H were recommended for elimination as discussed in Section 2.3.3, Alternatives Considered and Eliminated from Detailed Analysis. The remaining seven routing segments (Segments A, B, C, D, F, G, and I) were combined to create four end-to-end routing Alternatives for the proposed transmission line between the Barren Ridge and Haskell Canyon switching stations as described below. These four routing Alternatives were used in the development of the four action Alternatives for the proposed Project.

In addition to a new double-circuit 230 kV transmission line between the Barren Ridge and Haskell Canyon switching stations, whose route would vary among the action Alternatives, the four action Alternatives would include the following common components: the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station.

Please refer to Section 2.4, Proposed Action (Alternative 2), for the detailed discussion of common Project components (Section 2.4.1), as well as for discussion of LADWP's General Practices (Section 2.4.5), construction work force (Section 2.4.6), and operation and maintenance of BRRTP (Section 2.4.7), which would also be applicable to all action Alternatives.

Refer to Figure 2-1 for a map of the action Alternatives. A full set of representative cross-sections along all action Alternatives is provided in Appendix L to this Final EIS/EIR; selected cross-sections are provided within this chapter below. A summary of LADWP existing and proposed ROWs at each cross-section location is provided in Table ROW-1.

TABLE ROW-1. WIDTH OF EXISTING AND PROPOSED LADWP ROW AT CROSS-SECTION LOCATIONS

Cross- Section	Existing ROW (feet)	Additional Proposed ROW (feet)	Total Proposed ROW (feet)
A: Common to all action Alternatives	200	200	400
B: Alternative 1	N/A	200	200
C: Alternative 1	None	200	200
D: Common to all action Alternatives	105	200	410
	105		
E: Alternatives 2, 2a, and 3	250	200	450
F: Alternatives 2 and 2a	125	None	250
	125		
G: Alternatives 2 and 2a	None	200	200
H: Alternative 3	None	200	200
I: Alternative 3	None	200	200
J: Alternative 3	250	200	450
K: Common to all action Alternatives	250	None	250

Proposed Action (Alternative 2)

LADWP's Proposed Action (Alternative 2) includes the preliminary routing Segments A, B, and G. Refer to Section 2.4, Proposed Action, for a full discussion of this Alternative.

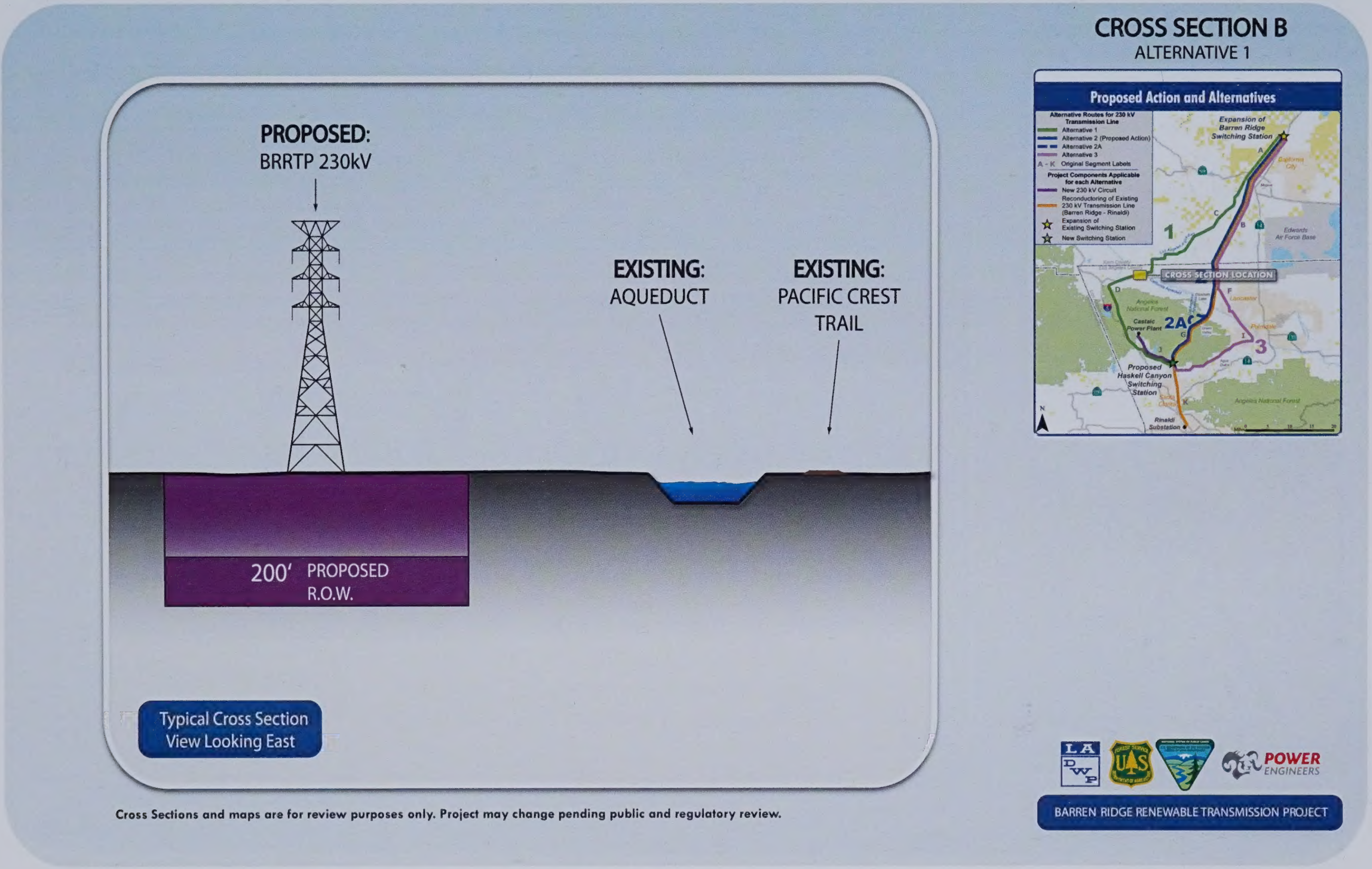
Alternative 1

The Alternative 1 230 kV double-circuit transmission line includes the preliminary routing Segments A, C, and D, and is the longest Alternative, at 83 miles long. It would run from the Barren Ridge Switching Station to the unincorporated community of Mojave, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southwest to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the I-5 utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. This Alternative was retained for analysis because it would meet the Project purpose and need/objectives, be feasible, and have the potential to reduce or minimize environmental impacts associated with the new 230 kV double-circuit transmission line by avoiding the unincorporated communities of Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Antelope Acres.

Right-of-Way Permits and Grants

The new 230 kV double-circuit transmission line in Alternative 1 would traverse 16 miles of ANF lands; LADWP would seek a 200-foot-wide ROW through a Special Use Authorization from the USFS in order to implement Alternative 1. The new line would traverse four miles of BLM-managed lands (under the jurisdiction of the Ridgecrest Field Office); LADWP would seek an additional 200-foot-wide ROW adjacent to the existing BR-RIN transmission line through a right-of-way grant from the BLM. See Figures 2-19, 2-20 and 2-21, Cross-Sections B, C, and D, for representative cross-sections of the proposed ROW.

FIGURE 2-19. CROSS SECTION B


CROSS SECTION B
ALTERNATIVE 1
PROPOSED:
BRRTP 230kV
EXISTING:
AQUEDUCT
EXISTING:
PACIFIC CREST
TRAIL
200′ PROPOSED
R.O.W.
Typical Cross Section
View Looking East
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
CROSS SECTION LOCATION
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
Proposed Haskell Canyon Switching Station
Rinaldi Substation
Santa Clarita
1
2A
3
A
B
C
D
F
G
I
J
K
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

FIGURE 2-20. CROSS SECTION C

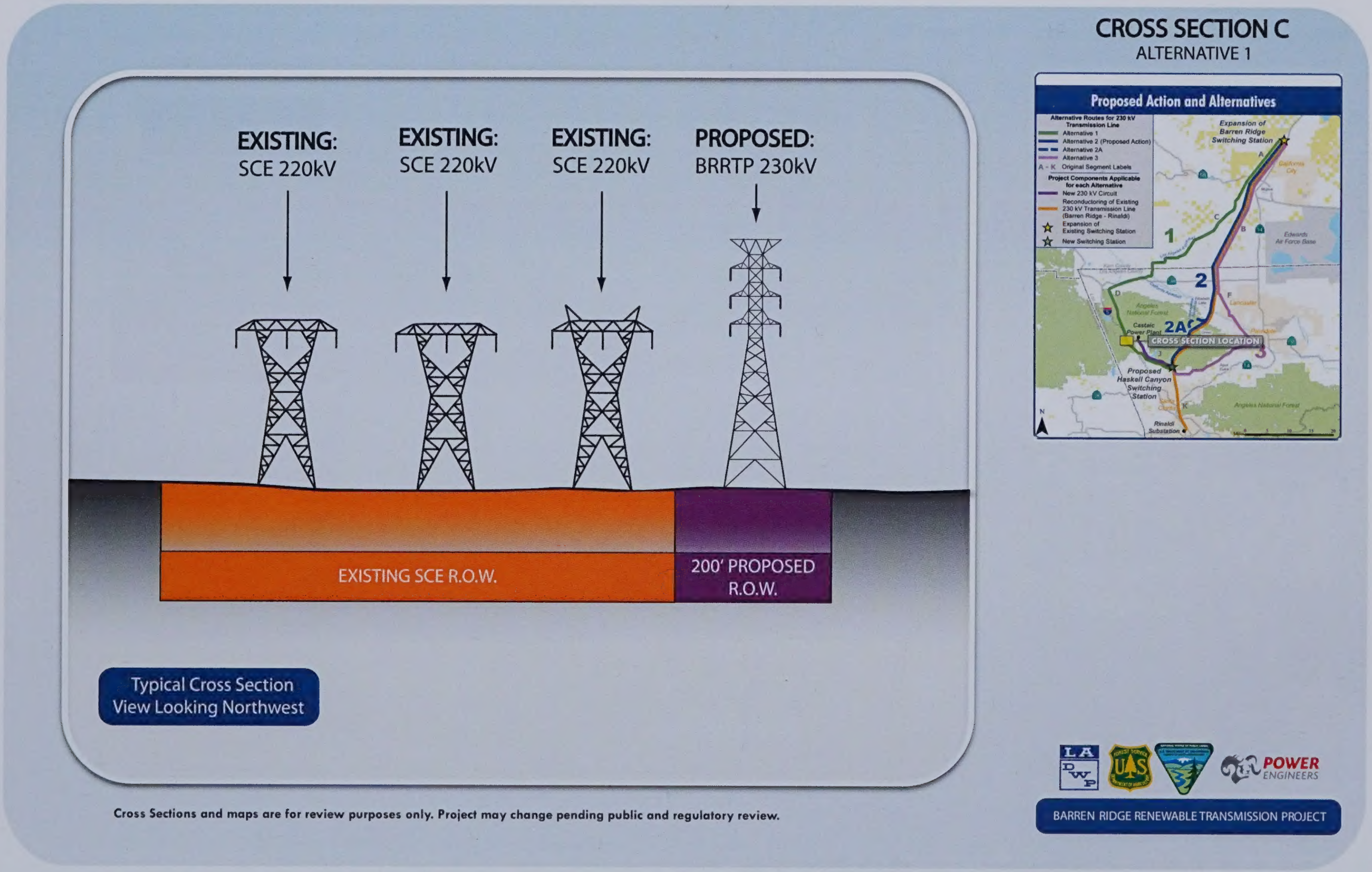

CROSS SECTION C
ALTERNATIVE 1
EXISTING: SCE 220kV
EXISTING: SCE 220kV
EXISTING: SCE 220kV
PROPOSED: BRRTP 230kV
EXISTING SCE R.O.W.
200' PROPOSED R.O.W.
Typical Cross Section View Looking Northwest
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Lancaster
Palmdale
Angeles National Forest
Castaic Power Plant
CROSS SECTION LOCATION
Proposed Haskell Canyon Switching Station
Rinaldi Substation
Santa Clarita
1
2
2A
3
A
B
C
D
F
J
K
N
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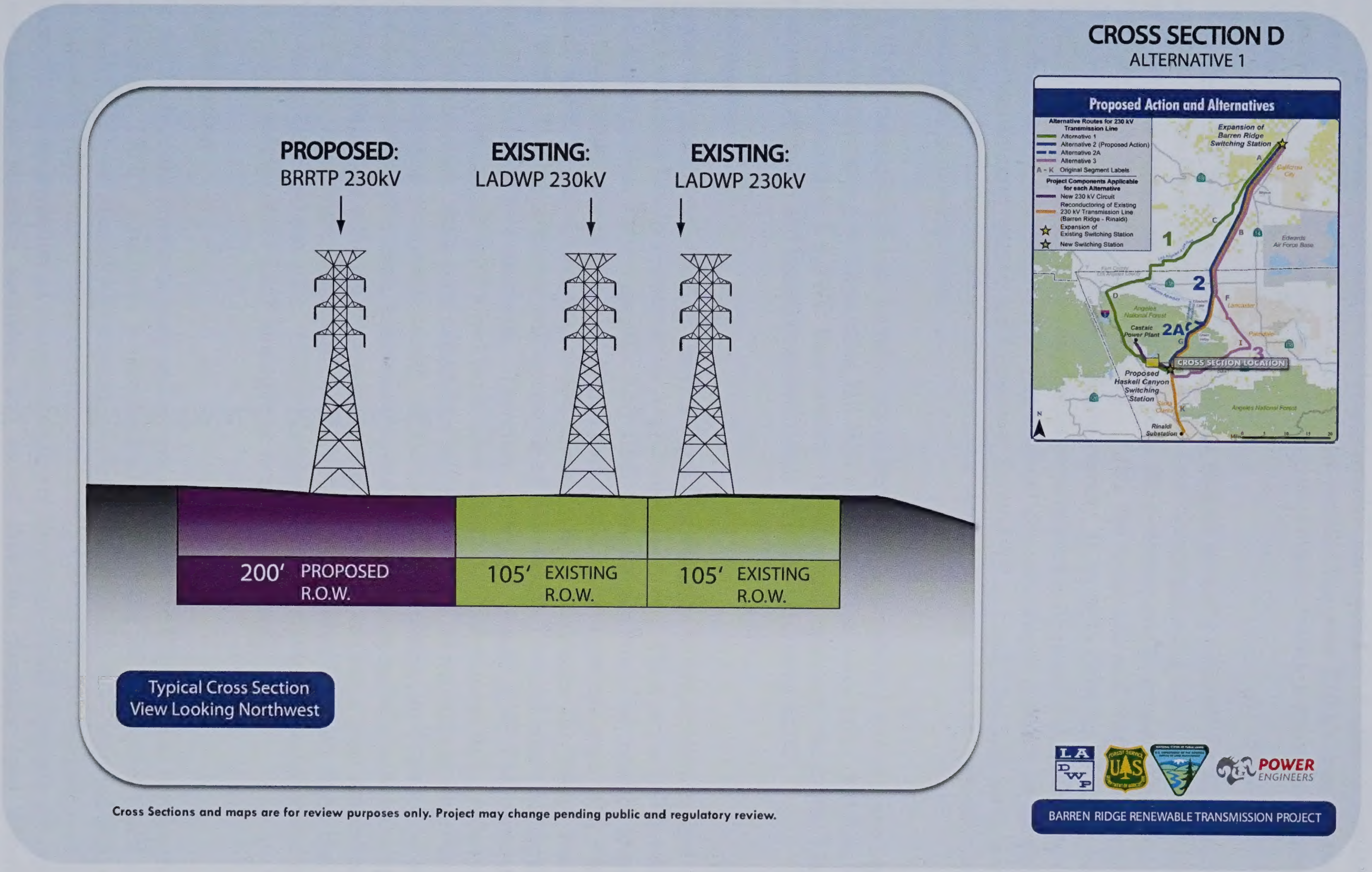
FIGURE 2-21. CROSS SECTION D


CROSS SECTION D
ALTERNATIVE 1
PROPOSED: BRRTP 230kV
EXISTING: LADWP 230kV
EXISTING: LADWP 230kV
200' PROPOSED R.O.W.
105' EXISTING R.O.W.
105' EXISTING R.O.W.
Typical Cross Section View Looking Northwest
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
CROSS SECTION LOCATION
Proposed Haskell Canyon Switching Station
Santa Clarita
Rinaldi Substation
Angeles National Forest
1
2
2A
3
A
B
C
D
F
G
I
K
N
Miles 0 5 10 15 20
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

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A majority of this Alternative would be in unincorporated Kern and Los Angeles Counties, with two miles on State Lands, and 61 miles on private lands. The new 230 kV transmission line would cross the unincorporated communities of Mojave, Holiday Valley Estates, and Castaic and the City of Santa Clarita.

As necessary, LADWP would seek to purchase the private property required for the Project. As soon as a property has been identified through the final design planning and after the completion of the environmental review and approval process, the property owner would be notified of the LADWP's interest in acquiring the property. After the appraisal and inspection process, a written offer would be presented to the property owner. If an agreement could not be reached after the LADWP had exhausted all its opportunities to reach a settlement with a property owner, the City could choose to exercise its power of eminent domain. For discussion of the potential impacts of eminent domain, please see Chapter 4, Section 4.2.3, Land Use, and Section 4.2.13, Socioeconomics. In some instances, the LADWP could instead seek an easement on the property, rather than ownership in fee.

The new 230 kV transmission line corridor associated with Alternative 1 would have separate impacts from reconductoring in the existing BR-RIN corridor. Also, some areas of Alternative 1 would not parallel existing LADWP transmission lines or the aqueduct; therefore, LADWP would be required to patrol and maintain an additional 25 miles of isolated ROW.

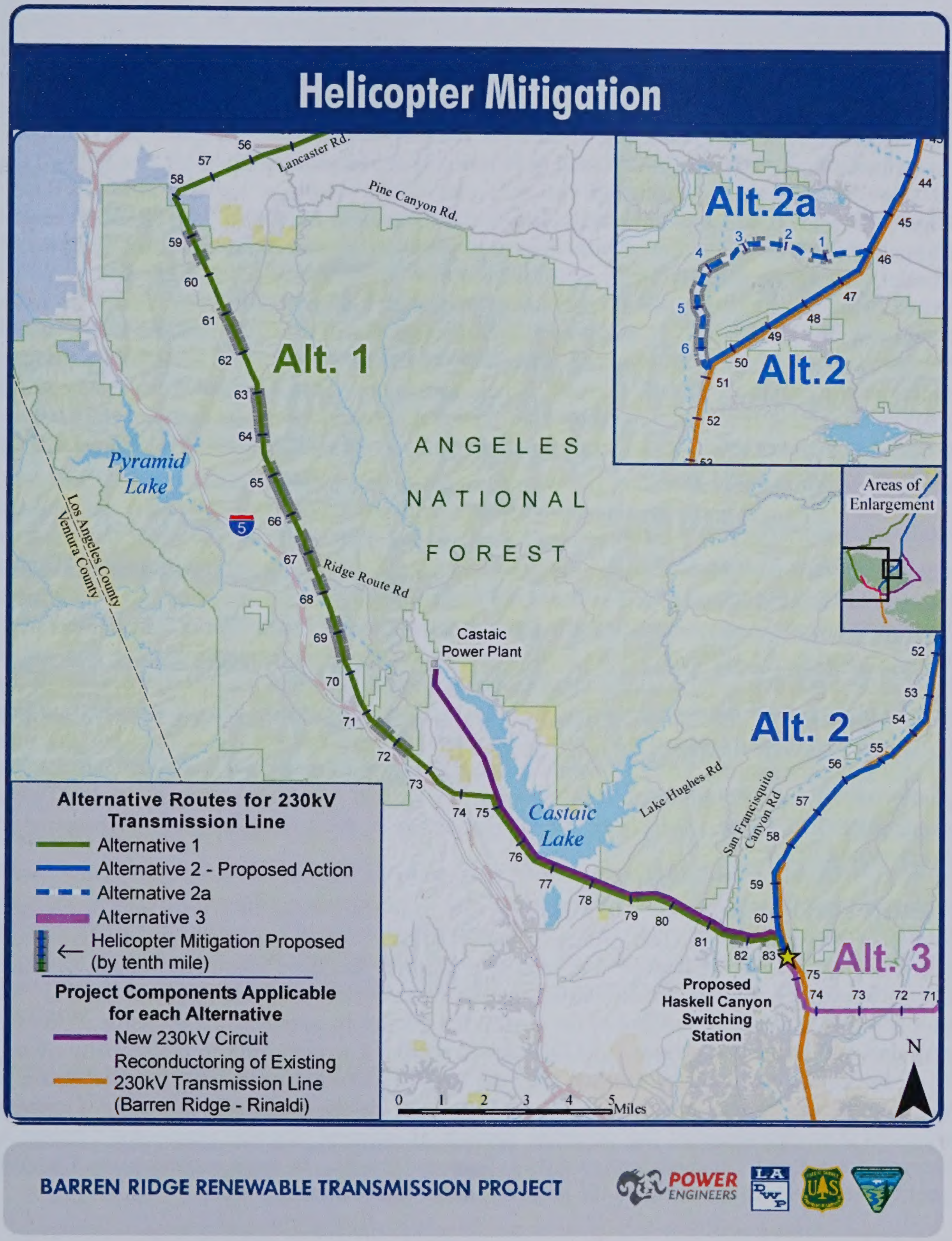
Plan Amendments

On land under the jurisdiction of BLM, an existing utility corridor would be utilized and would not require a California Desert Conservation Area Plan amendment. Prior to the USFS issuing a Special Use Authorization, Project-specific ANF LMP amendments would be required to exempt the Project from Scenic Integrity Objectives, Land Use Zone compatible uses, and Riparian Conservation Areas. The USFS has adopted management standards for visual resources addressing SIOs. The construction and operation of Alternative 1 would result in conditions inconsistent with existing SIO standards. Therefore, a Project-specific ANF LMP amendment would be necessary to exempt the Project from those standards. The management objectives for the Riparian Conservation Areas were established in the ANF LMP to maintain or improve long-term aquatic and riparian ecosystem health, including quantity, quality, and timing of stream flows. The construction, operation, maintenance, and decommissioning of a new transmission line would be inconsistent with the management objectives and require a plan amendment to exempt the Project from those standards. A portion of Alternative 1 would cross the Back County Non-Motorized land use zone. Utility corridors are not considered a suitable use in that area, and a Project-specific ANF LMP amendment would be required.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500, Bell 212, or Sikorsky Skycrane). Refer to Figure 2-22, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information are detailed above in the description of the Proposed Action (Alternative 2) and Table 2-7.

FIGURE 2-22. IDENTIFIED HELICOPTER MITIGATION LOCATIONS


Helicopter Mitigation
Alt. 1
Alt. 2a
Alt. 2
Alt. 2
Alt. 3
ANGELES NATIONAL FOREST
Pyramid Lake
Castaic Lake
Castaic Power Plant
Lancaster Rd.
Pine Canyon Rd.
Ridge Route Rd
Lake Hughes Rd
San Francisquito Canyon Rd
Los Angeles County
Ventura County
5
Areas of Enlargement
Proposed Haskell Canyon Switching Station
Alternative Routes for 230kV Transmission Line
Alternative 1
Alternative 2 - Proposed Action
Alternative 2a
Alternative 3
Helicopter Mitigation Proposed (by tenth mile)
Project Components Applicable for each Alternative
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
0 1 2 3 4 5 Miles
N
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

Alternative 2a

The 230 kV double-circuit transmission line in Alternative 2a includes the preliminary routing Segments A, B, and G, but includes a re-route avoiding the unincorporated community of Green Valley. It is 63 miles long and would be very similar to the Proposed Action (Alternative 2), with 56 miles of the same alignment. Alternative 2a would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing onto NFS lands and ending at the proposed Haskell Canyon Switching Station. The route would remain within designated utility corridors and would parallel existing transmission lines, with the exception of the nearly seven miles that would be routed around the unincorporated community of Green Valley. The Green Valley Re-route would run outside of existing utility corridors through the ANF. The re-route would rejoin Segment G south of the unincorporated community of Green Valley before continuing south and ending at the proposed Haskell Canyon Switching Station. This Alternative was retained for analysis because it would meet the Project purpose and need/objectives, be feasible, and have the potential to avoid or minimize environmental effects by avoiding the unincorporated community of Green Valley.

Right-of-Way Permits and Grants

The new 230 kV transmission line would generally parallel the existing 230 kV transmission line that would be reconductored, and traverse the unincorporated communities of Mojave, Willow Springs, Antelope Acres, and Elizabeth Lake and the City of Santa Clarita. Reconductoring would extend to the cities of Santa Clarita and Los Angeles; the new transmission line would bypass the unincorporated community of Green Valley. The following jurisdictions would be also be traversed: 16 miles of the Angeles National Forest for the new 230 kV transmission line (13 miles for reconductoring) and four miles of lands managed by the BLM. For the new 230 kV transmission line, LADWP would seek a BLM right-of-way grant and USFS Special Use Authorization for an additional 200-foot-wide ROW that would be adjacent to LADWP's existing BR-RIN ROW. See Figure 2-7, Cross-Section A, for a representative cross-section of the proposed ROW.

The new 230 kV transmission line would traverse forty-three miles of private land and would require a 200-foot-wide ROW. As necessary, LADWP would seek to purchase the private property required for the Project. As soon as a property has been identified through the final design planning and after completion of the environmental review and approval process, the property owner would be notified of the LADWP's interest in acquiring the property. After the appraisal and inspection process, LADWP would present a written offer to the property owner. If an agreement could not be reached after the LADWP had exhausted all its opportunities to reach a settlement with a property owner, the City could choose to exercise its power of eminent domain. For discussion of the potential impacts of eminent domain, please see Chapter 4, Section 4.2.3, Land Use, and Section 4.2.13, Socioeconomics. In some instances, the LADWP could instead seek an easement on the property, rather than ownership in fee.

For the majority of the alignment, the two new 230 kV circuits would be placed on new double-circuit transmission towers, but for approximately 1.5 miles the circuits would be placed on existing four-circuit structures that are just north of the proposed Haskell Canyon Switching Station (see Figure 2-4). Similar to Alternative 2, most impacts would be concentrated within the same corridor as the reconductoring. However, approximately six miles of proposed new 230 kV transmission line would deviate from the proposed reconductoring alignment and require a new corridor within the ANF. Impacts would occur within each corridor for the six-mile deviation from the BR-RIN corridor, resulting in additional impacts.

Plan Amendments

On land under the jurisdiction of BLM, an existing utility corridor (Corridor A) would be utilized and no California Desert Conservation Area Plan amendment would be required. Prior to the USFS issuing a Special Use Authorization, the following Project-specific amendments to the 2005 ANF LMP would be required: Forest Standards S9 and S10 (related to meeting the Scenic Integrity Objectives on NFS lands), Forest Standard S1 (related to the Pacific Crest Trail), and Standards related to Riparian Conservation Areas and Back Country Non-Motorized land use zones.

Scenic Integrity Objective

The USFS has adopted management standards for visual resources addressing SIOs. The construction and operation of Alternative 2a would result in conditions that would be inconsistent with the existing SIO standards. Therefore, a Project-specific ANF LMP amendment would be necessary to exempt the Project from those standards.

Pacific Crest Trail

The ANF LMP has established a specific design standard for the Pacific Crest Trail to protect the scenic integrity of foreground views as well as from designated viewpoints. The construction and operation of a new 230 kV transmission line would not meet the Desired Condition or the SIO levels specific to the ANF LMP. A Project-specific ANF LMP amendment would be required to exempt the Project from this standard.

Riparian Conservation Area

Management objectives for riparian conservations areas were established in the ANF LMP to maintain or improve long-term aquatic and riparian ecosystem health, including quantity, quality, and timing of stream flows. Even with mitigation, the construction, operation, maintenance, and decommissioning of a new transmission line would be inconsistent with the management objectives and require a Project-specific ANF LMP amendment to exempt the Project from those standards.

Back Country Non-Motorized land use zone

A portion of the new transmission line would cross within the Back Country Non-Motorized land use zone. Utility corridors are not a suitable use for that area, and a Project-specific ANF LMP amendment would be necessary to exempt the Project from that standard.

Three-Circuit Tower Mitigation

Similar to the Proposed Action (Alternative 2), in areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts, as discussed in Chapter 4 of this Final EIS/EIR, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for Alternative 2, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in Figure 2-17, the Three-Circuit Tower Mitigation Map.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Figure 2-22, Identified Helicopter Mitigation Locations, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. However, the following site and ground disturbing construction activities would be required to construct the new transmission line within the identified helicopter construction areas: portable landing pads, helicopter fly yards/staging areas, tower structure vegetation clearing, guard structures at major crossings, wire stringing sites, pullouts, and temporary access roads. The estimated sizes of these auxiliary sites (temporary and permanent) and additional construction information are detailed above in the description of the Proposed Action (Alternative 2) and Table 2-7.

Alternative 3

The proposed 230 kV double-circuit transmission line in Alternative 3 includes preliminary routing Segments A, B, F, and I. It is 76 miles long and would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave through the Antelope Valley and approximately one mile east of the Antelope Valley California Poppy Reserve before continuing southeast past SCE's Antelope Substation. The route would then travel toward the city of Palmdale, parallel to SCE's existing high-voltage transmission lines. It would turn sharply south to parallel LADWP's existing Victorville – Rinaldi 500 kV and Adelanto – Rinaldi 230 kV transmission lines. This Alternative would then parallel these transmission lines west, crossing two miles of the ANF. The Alternative would then parallel LADWP's 500 kV PDCI line north to the proposed Haskell Canyon Switching Station. This Alternative was retained for analysis because it would meet the Project purpose and need/objectives, be feasible, and have the potential to avoid or minimize environmental effects by avoiding an eligible Wild and Scenic River and resulting in fewer impacts to the ANF.

Right-of-Way Permits and Grants

The new 230 kV transmission line would traverse four miles of the ANF, and four miles of lands managed by the BLM; LADWP would seek a BLM right-of-way grant adjacent to LADWP's existing BR-RIN ROW and USFS Special Use Authorization of an additional 200-foot-wide ROW. See Figures 2-23 and 2-24, Cross-Sections H and J, for representative cross-sections of the proposed ROW.

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FIGURE 2-23. CROSS SECTION H

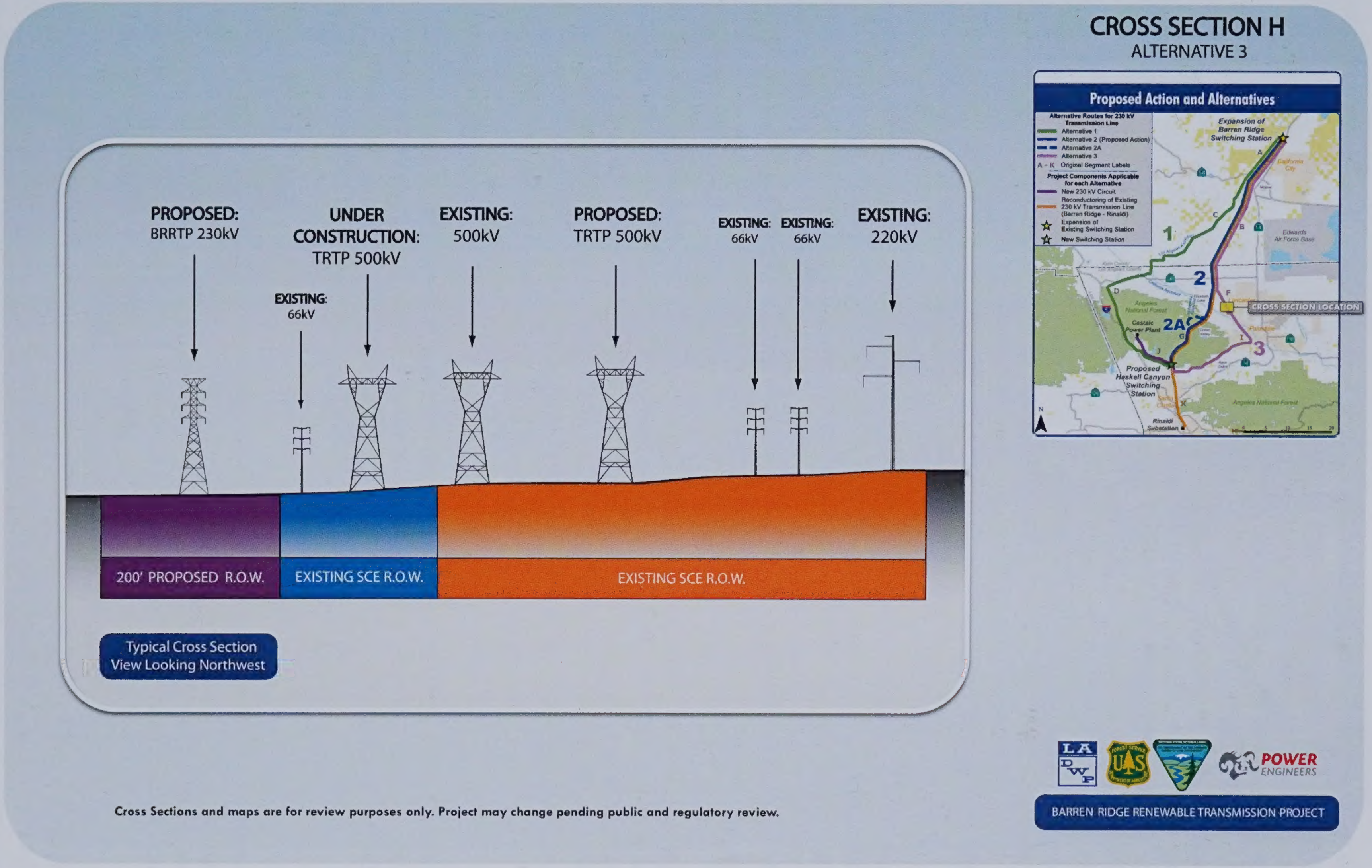
CROSS SECTION H
ALTERNATIVE 3
PROPOSED: BRRTP 230kV
UNDER CONSTRUCTION: TRTP 500kV
EXISTING: 500kV
PROPOSED: TRTP 500kV
EXISTING: 66kV
EXISTING: 66kV
EXISTING: 220kV
EXISTING: 66kV
200' PROPOSED R.O.W.
EXISTING SCE R.O.W.
EXISTING SCE R.O.W.
Typical Cross Section
View Looking Northwest
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Kern County
Los Angeles County
Angeles National Forest
Castaic Power Plant
Proposed Haskell Canyon Switching Station
Lancaster
Palmdale
Santa Clarita
Rinaldi Substation
CROSS SECTION LOCATION
1
2
2A
3
A
B
C
D
F
G
I
J
K
N
Miles 0 5 10 15 20
Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.
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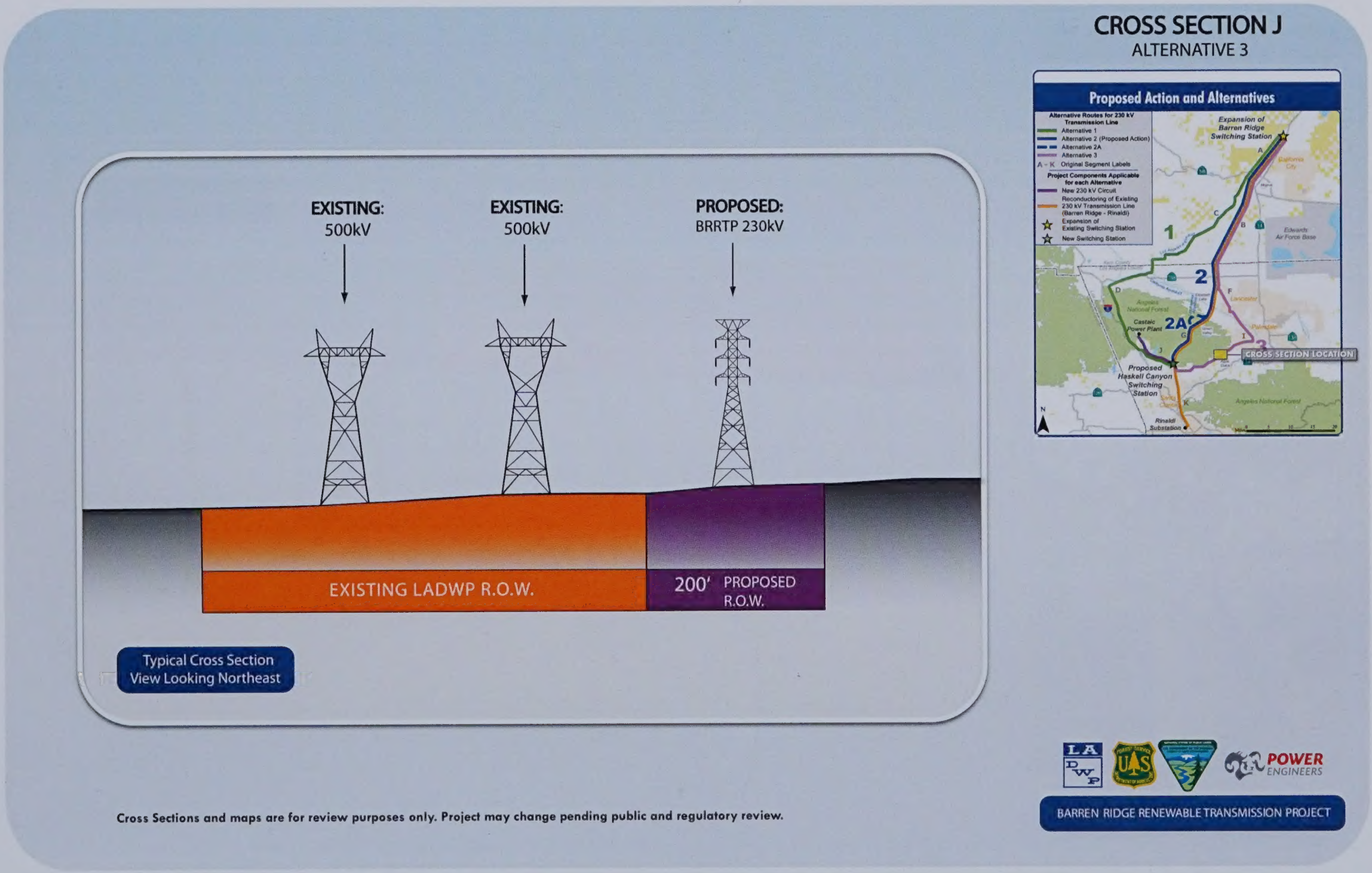
FIGURE 2-24. CROSS SECTION J



CROSS SECTION J
ALTERNATIVE 3

EXISTING: 500kV
EXISTING: 500kV
PROPOSED: BRRTP 230kV
EXISTING LADWP R.O.W.
200′ PROPOSED R.O.W.
Typical Cross Section
View Looking Northeast
Proposed Action and Alternatives
Alternative Routes for 230 kV Transmission Line
Alternative 1
Alternative 2 (Proposed Action)
Alternative 2A
Alternative 3
A - K Original Segment Labels
Project Components Applicable for each Alternative
New 230 kV Circuit
Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
Expansion of Existing Switching Station
New Switching Station
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
Proposed Haskell Canyon Switching Station
Rinaldi Substation
Santa Clarita
Angeles National Forest
CROSS SECTION LOCATION
1
2
2A
3
A
B
C
D
F
G
I
J
K
N
0 5 10 15 20

Cross Sections and maps are for review purposes only. Project may change pending public and regulatory review.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT

The new transmission line would traverse 68 miles of private lands, with a majority of this Alternative in unincorporated Kern and Los Angeles Counties and potentially affecting the unincorporated communities of Mojave, Willow Springs, Leona Valley, Antelope Acres, and Agua Dulce, and the cities of Lancaster, Palmdale, and Santa Clarita. As necessary, LADWP would seek to purchase the private property required for the Project. As soon as a property has been identified through the final design planning and after the completion of the environmental review and approval process, the property owner would be notified of the LADWP's interest in acquiring the property. After the appraisal and inspection process, LADWP would present a written offer to the property owner. If an agreement could not be reached after the LADWP had exhausted all its opportunities to reach a settlement with a property owner, the City could choose to exercise its power of eminent domain. For discussion of the potential impacts of eminent domain, please see Chapter 4, Section 4.2.3, Land Use, and Section 4.2.13, Socioeconomics. In some instances, the LADWP could instead seek an easement on the property, rather than ownership in fee. Alternative 3 is the only Alternative expected to result in take of residential structures, as seven single-family homes were noted directly within the ROW.

Approximately 38 miles of Alternative 3's northern alignment would parallel the reconductoring of BR-RIN and impacts would be concentrated within the same corridor. Thirty-four miles of the southern portion of the Alternative would be placed in a separate utility corridor from the reconductoring; 11 miles of Alternative 3 would be within an existing utility corridor that currently contains only SCE lines, and would add new areas for LADWP to patrol and maintain.

Plan Amendments

On land under the jurisdiction of BLM, an existing utility corridor (Corridor A) would be utilized and no California Desert Conservation Area Plan amendment would be required. Prior to the USFS issuing a Special Use Authorization, the following Project-specific amendments to the 2005 ANF LMP would be required: Forest Standards S9 and S10 (related to meeting the Scenic Integrity Objectives on NFS lands), Forest Standard S1 (related to the Pacific Crest Trail, and Standards related to Riparian Conservation Areas.

Scenic Integrity Objective

The USFS has adopted management standards for visual resources addressing SIOs. The construction and operation of Alternative 3 would result in conditions that would be inconsistent with the existing SIO standards. Therefore, a Project-specific ANF LMP amendment would be necessary to exempt the Project from those standards.

Pacific Crest Trail

The ANF LMP has established a specific design standard for the Pacific Crest Trail to protect the scenic integrity of foreground views as well as from designated viewpoints. The construction and operation of a new 230 kV transmission line would not meet the Desired Condition or the SIO levels specific to the ANF LMP. A Project-specific ANF LMP amendment would be required to exempt the Project from this standard.

Riparian Conservation Area

Management objectives for riparian conservations areas were established in the ANF LMP to maintain or improve long-term aquatic and riparian ecosystem health, including quantity, quality, and timing of stream flows. Even with mitigation, the construction, operation, maintenance, and decommissioning of a new transmission line would be inconsistent with the management objectives and require a Project-specific ANF LMP amendment to exempt the Project from those standards.

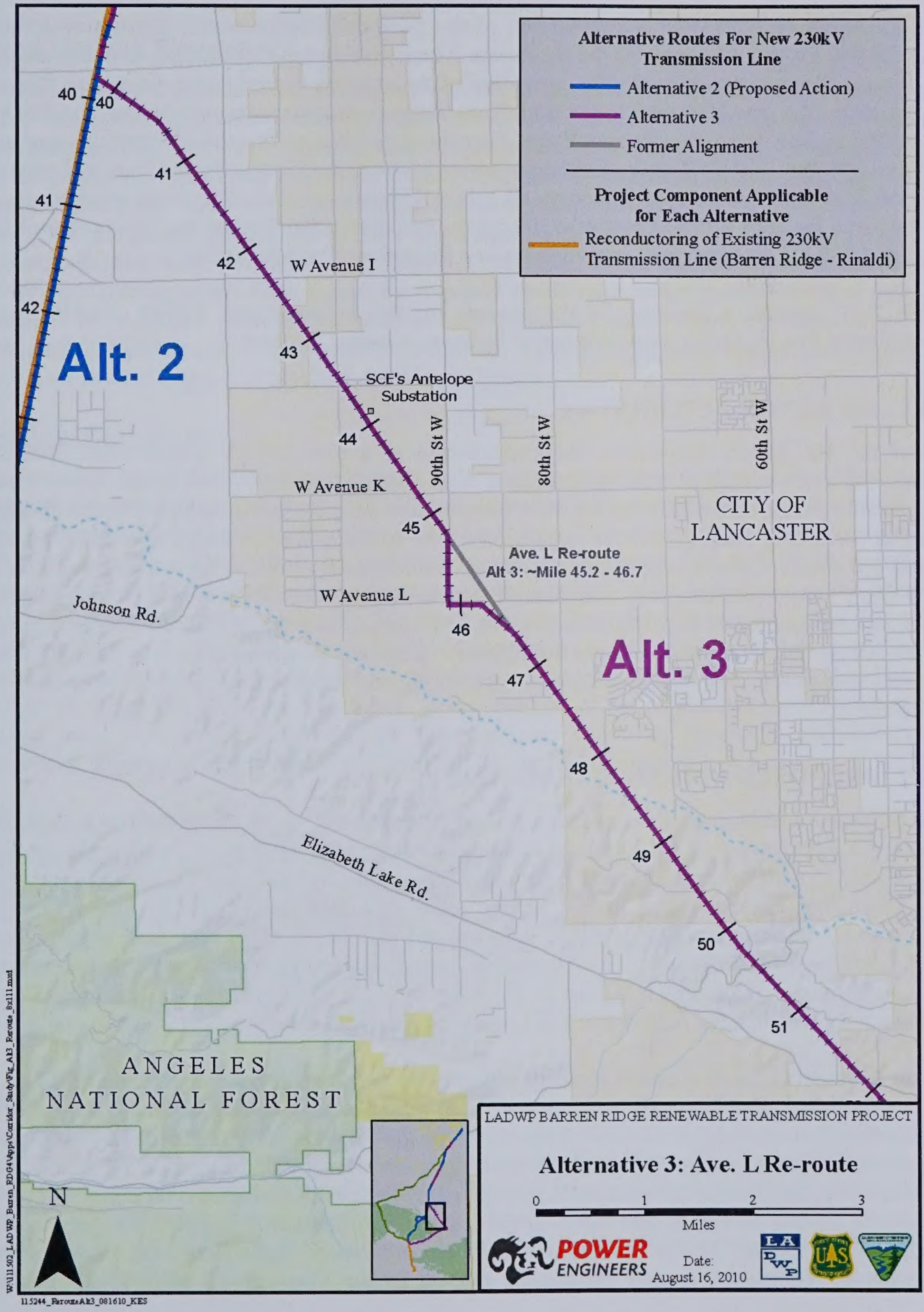
Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts, as discussed in Chapter 4 of this Final EIS/EIR, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 2-17.

Avenue L Re-Route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 2-25 for an illustration of the Avenue L Re-Route.

FIGURE 2-25. AVENUE L RE-ROUTE ON ALTERNATIVE 3


Alternative Routes For New 230kV Transmission Line
Alternative 2 (Proposed Action)
Alternative 3
Former Alignment
Project Component Applicable for Each Alternative
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
Alt. 2
Alt. 3
40
41
42
43
44
45
46
47
48
49
50
51
W Avenue I
SCE's Antelope Substation
W Avenue K
W Avenue L
90th St W
80th St W
60th St W
Ave. L Re-route
Alt 3: ~Mile 45.2 - 46.7
CITY OF LANCASTER
Johnson Rd.
Elizabeth Lake Rd.
ANGELES NATIONAL FOREST
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Alternative 3: Ave. L Re-route
0
1
2
3
Miles
POWER ENGINEERS
Date: August 16, 2010
W:\11502_LADWP_Barren_RDG4\Apps\Corridor_Study\Fig_Alt3_Reroute_8x111.mxd
115244_RerouteAlt3_081610_KES

2.6 ALTERNATIVES COMPARISON SUMMARY

The following sections offer a comparison of the potential environmental impacts associated with the five Project Alternatives: the No Action Alternative and the four action Alternatives. As the Project common components (the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station) are shared by all action Alternatives, their associated impacts would be the same for each action Alternative; therefore, this discussion focuses on the impacts of the proposed 230 kV double-circuit transmission line for each action Alternative.

Table 2-11 contains a summary of the impacts for the proposed new 230 kV double-circuit transmission line for each action Alternative by environmental resource.

2.6.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit on existing structures from Haskell Canyon to the Castaic Power Plant, the reconductoring of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur. Current, ongoing operation and maintenance activities for existing facilities in the Project area would continue. Impacts of the No Action Alternative would include impacts from the continuation of ongoing activities, but new impacts associated with the implementation of the No Action Alternative are not anticipated. Relative to Alternatives 1, 2, 2a, and 3, all impacts associated with the construction, operation, and maintenance of BRRTP would be avoided.

2.6.2 PROPOSED ACTION (ALTERNATIVE 2)

The proposed double-circuit transmission line of Alternative 2 is the shortest transmission line among the Alternatives, at 61 miles. Its length is similar to the Alternative 2a transmission line (63 miles), 15 miles shorter than the Alternative 3 transmission line, and 22 miles shorter than the Alternative 1 transmission line. Thirteen miles of USFS land would be crossed by the Alternative 2 transmission line, less than Alternative 1 and 2a (16 miles each) and notably more than Alternative 3 (four miles). The Alternative 2 transmission line would cross the least private land at 44 miles. While this is similar to the Alternative 2a transmission line, at 43 miles, it is considerably less than the Alternative 1 (61 miles) or Alternative 3 (67 miles) transmission lines.

As on Alternative 2a, new access roads would only be required for the construction of 0.1 mile of the proposed double-circuit transmission line, while approximately one half mile of the Alternative 3 transmission line and seven miles of the Alternative 1 transmission line would require new access roads. Although specific areas for Helicopter Mitigation have not been identified for Alternative 2, Helicopter Mitigation may be identified during final design for steep areas with limited access, further reducing the amount of transmission line requiring new access roads. Three-Circuit Tower Mitigation would be utilized for eight miles, the most for any Alternative. Temporary ground disturbance impacts for the Alternative 2 transmission line are estimated to be around 400 acres and permanent ground disturbance impacts are estimated to be between 57 and 70 acres, similar to Alternative 2a, but less than Alternative 1 or Alternative 3.

Land Use and Recreation

The Alternative 2 transmission line centerline would be within 1,000 feet of 156 residences, more than for the transmission line of Alternatives 1 or 2a, but less than for the Alternative 3 transmission line. The transmission line centerline would be within an Eligible Wild and Scenic River Corridor for three miles, the most for any Alternative. Similar to the Alternatives 1 and 2a transmission lines, there would be a single crossing of the Pacific Crest National Scenic Trail. No USFS-designated Back Country Non-Motorized Land Use Zones are crossed. To address incompatibilities with the ANF Land Management Plan, Project-specific amendments to the ANF Land Management Plan would be required for Scenic Integrity Objectives, a specific Pacific Crest National Scenic Trail standard, and Riparian Conservation Area objectives. The Alternative 2 transmission line would be within an Agency Designated Utility Corridor for 15 miles, which represents 87% of the federal land crossed.

Cultural Resources

Because few recent cultural resources surveys have been completed for any of the Alternatives, the analysis presented in this document is largely based on known sites identified in past surveys. Previous surveys conducted on 12 miles of the Alternative 2 transmission line centerline within a 500-foot corridor indicate that the centerline would cross within 500 feet of 15 previously recorded cultural resource sites determined or assumed to be eligible to be listed to the National Register of Historic Places (NRHP), the same as for Alternative 2a and less than for either Alternatives 1 or 3. The Olive Power Plant 1 Transmission Line, which would be crossed by the transmission line in all Alternatives, is eligible to be listed to the NRHP and is listed on the California Register of Historic Resources. The centerline of the Alternative 2 transmission line would cross two miles identified with high resource sensitivity levels for paleontological resources, similar to Alternative 2a and less than for either Alternatives 1 or 3.

Wildfire and Fuels

The Alternative 2 transmission line would have the least mileage of modeled very high risk conditions for native vegetation alteration and, along with the Alternative 2a transmission line, would have the least mileage of very high risk conditions for potential for wildfire, at 1.5 miles and 2.5 miles respectively. At 4.5 miles of modeled very high risk conditions for firefighter safety and obstruction to suppression, the Alternative 2 transmission line would have less mileage than for either the Alternative 1 or 2a transmission line, but more than for the Alternative 3 transmission line.

Traffic and Transportation

The construction of the Alternative 2 transmission line would cause 16 miles of significant traffic impacts, less than for Alternatives 1 and 3 but more than for Alternative 2a. Additionally, the construction would include five USFS Roads that may require temporary improvements to the Objective Maintenance Levels, less than for Alternative 1, the same as for Alternative 2a, and more than for Alternative 3. No public roadway crossings would have poor Levels of Service during construction.

Visual Resources

Twelve miles of the Alternative 2 transmission line would result in moderate residual visual impacts and five miles would result in high residual visual impacts. Among the Alternatives, Alternative 2 would have the least mileage of both moderate and high residual impacts. Thirteen miles of the transmission line would be non-compliant with ANF SIOs; only the Alternative 3 transmission line would have fewer miles of non-compliance with the SIOs. No part of the line would be constructed within an ANF Land Use Zone determined to be not suitable for a major utility corridor. The Alternative 2 transmission line would be visible from the Pacific Crest National Scenic Trail in the foreground in the ANF for two miles; only the Alternative 2a transmission line would be visible for more miles from the Pacific Crest National Scenic Trail. Sixty-three residences, the most among the Alternatives, would be within 500 feet of the centerline of the Alternative 2 transmission line and would be assumed to have visual impacts.

Air Quality and Greenhouse Gas

All Alternatives would exceed air quality emission thresholds for CO, NOx and PM10 in the Antelope Valley Air Quality Management District (AVAQMD) and for CO, NOX, PM10 and PM2.5 in the South Coast Air Quality Management District (SCAQMD). Annual construction emissions for the portion of Alternative 2 on federal lands would be less than the *de minimis* thresholds for all pollutants in both the South Coast Air Basin (SCAB) and the Mojave Desert Air Basin (MDAB) during 2012 and 2013. In 2014, emissions of NOx would be above the *de minimis* threshold for NOx of 10 tons per year.

Biological Resources

Like the Alternatives 2a and 3 transmission lines, the Alternative 2 transmission line would cross four miles with a known Federal and State Endangered Species Act-listed wildlife species, the desert tortoise. This is slightly less than for the Alternative 1 transmission line, which would cross lands with two known listed species, the desert tortoise and the California condor. Alternative 2 would have the only transmission line that crosses an area, 0.1 mile, with a known NFS special-status wildlife species, the coastal rosy boa. Similar to the Alternatives 2a and 3 transmission lines, the proposed Alternative 2 transmission line has one mile identified as high avian risk, less high avian risk mileage than the Alternative 1 transmission line. The proposed Alternative 2 transmission line is the only one identified with no mileage of high condor risk.

Similar to the Alternative 2a transmission line, the Alternative 2 transmission line would cross three miles with known NFS threatened, endangered, or special-status plant species, including areas identified with short-joint beavertail and slender mariposa lily. This is a greater distance with known sensitive plant species than would be crossed by the Alternatives 1 or 3 transmission lines. The Alternative 2 transmission line would cross 77 acres of riparian vegetation, similar to the Alternative 1 transmission line and less than the Alternatives 2a and 3 transmission lines. Like Alternatives 2a and 3, the Alternative 2 transmission line would cross 320 acres of Joshua tree woodland, which would be less than that crossed by the Alternative 1 transmission line. The Alternative 2 transmission line would cross 66 Riparian Conservation Areas (RCAs) and have 71 acres of RCAs within 500 feet of the centerline, less than Alternatives 1 and 2a, but more than Alternative 3. Four miles of the proposed Alternative 2 transmission line are identified as having noxious weeds or invasive species present within the 500-foot corridor, the most among the Alternatives.

Geology and Seismicity

The proposed Alternative 2 transmission line centerline crosses 10 miles identified for high levels of earthquake ground shaking, the least among the Alternatives. It would cross perpendicular to the San Andreas fault zone and thus would require a shorter distance than the other action Alternatives to traverse the high ground shaking areas. Two miles of liquefaction hazard zone would be crossed, similar to Alternatives 1 and 2a but less than Alternative 3. The transmission line would cross only 0.2 mile of potential landslides and 2.0 miles of earthquake-induced landslide hazard zones, the same as for Alternative 2a and less than for either Alternatives 1 or 3. The Alternative 2 transmission line would cross 20 miles identified with high soil erosion potential, similar to Alternative 3, more than Alternative 2a, and less than Alternative 1.

Water Resources

The Alternative 2 transmission line centerline would include 78 stream crossings and 95 perennial and intermittent streams within the 500-foot corridor, similar to Alternative 2a and less than Alternatives 1 and 3. While all Alternatives would cross the California Aqueduct, a National Wetland Inventory (NWI) wetland, only Alternatives 2 and 2a would also cross an NWI vegetated wetland. Three miles of Significant Ecological Areas would be crossed, similar to Alternative 2a and less than Alternatives 1 and 3.

Noise

The Alternative 2 transmission line would have the second greatest number of residences (156) within 1,000 feet of the alignment centerline; however, to implement the three-circuit tower mitigation, it would require removal of 5 miles of the existing BR-RIN, construction of a 7-mile temporary transmission line, and construction of three-circuit towers. Helicopter construction may be required in steep areas with limited access within ANF, but these areas would be expected to be near residences. Residents in the unincorporated community of Green Valley would experience longer construction noise impacts than would be expected for the construction of a new double-circuit transmission, without the three-circuit tower mitigation, and reconductoring of the existing BR-RIN. Areas close to the helicopter construction areas and along the flight paths would experience higher construction noise levels of 90 to 100 dB(A) for longer durations. Sensitive receptors near conventional ground construction areas, with the exception of conductor stringing activities, would experience construction noise levels of 65 to 95 dB(A).

Electrical Effects

The Alternative 2 transmission line would parallel existing transmission lines that would produce approximately the same level of electric fields; therefore, no significant difference between existing and proposed calculated electric fields would be anticipated. In areas along the alignment where the new transmission line would be close to the 500 kV PDCI transmission lines, the calculated electric fields would be significantly higher at the edge of the ROW (0.1 to 0.16 kV/m).

2.6.3 ALTERNATIVE 1

The proposed double-circuit transmission line of Alternative 1 is the longest transmission line among the Alternatives, at 83 miles. It would be seven miles longer than the Alternative 3 transmission line, 20 miles longer than the Alternative 2a transmission line, and 22 miles longer than the Alternative 2 transmission line. Sixteen miles of USFS land would be crossed by the Alternative 1 transmission line, similar to Alternative 2a, but more than either Alternative 2 (13 miles) or Alternative 3 (four miles). The transmission line of each Alternative would cross four miles of land under the management of BLM, but only the Alternative 1 transmission line would cross State Land (for two miles). The Alternative 1 transmission line would cross less private land (61 miles) than Alternative 3 (67 miles), but more than Alternative 2 (44 miles) or Alternative 2a (43 miles).

New access roads would be required for the construction of seven miles of the proposed Alternative 1 double-circuit transmission line, while approximately one-half-mile or less of the transmission line requires new access roads for Alternatives 2, 2a, and 3. Eight miles of the transmission line have been identified for Helicopter Mitigation. Additional Helicopter Mitigation areas may be identified during final design for steep areas with limited access, further reducing the amount of transmission line requiring new access roads. The temporary and permanent ground disturbing impacts are estimated to be the greatest among the Alternatives, at between 576 and 599 acres and between 120 and 199 acres, respectively.

Land Use and Recreation

The Alternative 1 transmission line centerline would be within 1,000 feet of 106 residences, exceeding only the number of residences within 1,000 feet of Alternative 2a (70 residences). The Alternative 1 transmission line would be the only one to cross a State Park Recreation Area, with a two-mile crossing of the Castaic Lake State Recreation Area. No Eligible Wild and Scenic River Corridors would be crossed. Similar to the Alternatives 2 and 2a transmission lines, there would be a single crossing of the Pacific Crest National Scenic Trail. Two miles of the transmission line would be within a USFS-designated Back Country Non-Motorized Land Use Zone, the most for any Alternative. To address incompatibilities with the ANF Land Management Plan, Project-specific amendments to the ANF Land Management Plan would be required to address Scenic Integrity Objectives, Riparian Conservation Area objectives, and the Back County Non-Motorized Land Use Zone. The Alternative 1 transmission line would be within an Agency Designated Utility Corridor for 14 miles, which represents 73% of the federal land crossed.

Cultural Resources

Because few recent cultural resources surveys have been completed for any of the Alternatives, the analysis presented in this document is largely based on known sites identified in past surveys. Previous surveys conducted on 31 miles of the Alternative 1 transmission line centerline within a 500-foot corridor indicate that the centerline would cross within 500 feet of 33 previously recorded cultural resource sites determined or assumed to be eligible to be listed to the NRHP, the most for any Alternative. The transmission line would cross the only NRHP-listed site among the Alternatives, the Old Ridge Route and its associated sites: the Halfway Inn, the Reservoir Summit Service Center, and the National Forest Inn. The Olive Power Plant 1 Transmission line, which would be crossed by the transmission line in all Alternatives, is eligible to be listed to the NRHP and is listed on the California Register of Historic Resources. The centerline of the Alternative 1 transmission line would cross 25 miles identified with high resource sensitivity levels for paleontological resources, significantly more than for any other Alternative.

Wildfire and Fuels

The Alternative 1 transmission line would include the most miles of modeled very high risk conditions for firefighter safety and obstructions to suppression with 10 miles modeled as such. It would also have the greatest mileage of modeled very high risk conditions for potential for wildfire and native vegetation alteration, with 8 and 13.5 miles respectively for each.

Traffic and Transportation

The construction of the Alternative 1 transmission line would cause the most miles of significant traffic impacts, with 21 miles of significant impacts. Additionally, the construction would include the eight USFS Roads that may require temporary improvements to their Objective Maintenance Levels, the most for any Alternative. No public roadway crossings would have poor Levels of Service during construction.

Visual Resources

Eighteen miles of the Alternative 1 transmission line would result in moderate residual visual impacts and 20 miles would result in high residual visual impacts. Among the Alternatives, only Alternative 3 would have more miles of moderate residual impacts, and the Alternative 1 transmission line would have the most miles of high impacts. Fifteen miles of the transmission line would be non-compliant with ANF SIOs; only the Alternative 2a transmission line would have more miles of non-compliance with the SIOs. Two miles of the line would be constructed within an ANF Land Use Zone determined to be not suitable for a major utility corridor, the greatest such mileage among the Alternatives. The Alternative 1 transmission line would be the only Alternative not visible from the Pacific Crest National Scenic Trail (PCT) within ANF. Sixty-three residences, the most among the Alternatives, would be within 500 feet of the centerline of the Alternative 1 transmission line; only Alternative 3 would have fewer residences within 500 feet.

Air Quality and Greenhouse Gas

All Alternatives would exceed air quality emission thresholds for CO, NOx and PM10 in the AVAQMD and for CO, NOX, PM10 and PM2.5 in the SCAQMD. Annual construction emissions for the portion of Alternative 1 on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012. In 2013 and 2014, emissions of NOx would be above the *de minimis* threshold for NOx of 10 tons per year.

Biological Resources

The Alternative 1 transmission line would cross four miles with known Federal and State Endangered Species Act-listed wildlife species, the desert tortoise and the California condor. This would be slightly more distance of listed wildlife species crossings than the Alternatives 2, 2a and 3 transmission lines, which would cross lands with one known listed species, the desert tortoise. The Alternative 1 transmission line would cross six miles identified as high avian risk and six miles identified as high condor risk, the highest among the Alternatives.

Similar to the Alternative 3 transmission line, the Alternative 1 transmission line would cross one mile with known NFS threatened, endangered, or special-status plant species, including areas identified with short-joint beavertail and slender mariposa lily. This is a shorter distance with known sensitive plant species than would be crossed by the Alternatives 2 or 2a transmission lines. The Alternative 1 transmission line would cross 79 acres of riparian vegetation, similar to the Alternative 2 transmission line and less than the Alternatives 2a and 3 transmission lines. The Alternative 1 transmission line would cross 334 acres of Joshua tree woodland, the most among the Alternatives. The transmission line would cross 151 RCAs and have 100 acres of RCAs within 500 feet of the centerline, the most among the Alternatives.

Geology and Seismicity

The Alternative 1 transmission line centerline would cross 13 miles identified for high levels of earthquake ground shaking, more than Alternatives 2 and 2a but less than Alternative 3. It would traverse the San Andreas fault zone diagonally and thus would require a longer distance to traverse the high impact area. One mile of liquefaction hazard zone would be crossed, similar to Alternatives 2 and 2a but less than Alternative 3. The transmission line would cross seven miles of potential landslides, the most among the Alternatives. It would cross nine miles of earthquake-induced landslide hazard zones, more than Alternatives 2 and 2a, but less than Alternative 3. The Alternative 1 transmission line would cross 26 miles identified with high soil erosion potential, the most among the Alternatives.

Water Resources

The Alternative 1 transmission line centerline would include 146 stream crossings and 168 perennial and intermittent streams within the 500-foot corridor, the most among the Alternatives. There would be a single NWI wetland crossed, the California Aqueduct. Eight miles of Significant Ecological Areas would be crossed, the most among the Alternatives.

Noise

The Alternative 1 transmission line would have the second least number of residences (106) within 1,000 feet of the alignment centerline, but would require the most miles (8.5 miles) of helicopter construction. Sensitive receptors near helicopter construction areas and along the helicopter flight paths would experience the highest noise levels (90 to 100 dB(A)) for longer durations. Sensitive receptors near conventional ground construction areas, with the exception of conductor stringing activities, would experience construction noise levels of 65 to 95 dB(A).

Electrical Effects

In areas that have existing transmission lines along the Alternative 1 transmission line alignment, the calculated electric field levels with the addition of the new line would not change relative to the existing corridors, because the existing high voltage transmission lines would produce approximately the same electric field levels. In areas where there are currently no existing high voltage transmission lines, the electric field levels would have a very minor increase at the edge of the ROW (0.06 to 0.2 kV/m).

2.6.4 ALTERNATIVE 2A

The proposed double-circuit transmission line of Alternative 2a, at 63 miles, is two miles longer than the shortest transmission line among the Alternatives (Alternative 2, at 61 miles). It would be 20 miles shorter than the Alternative 1 transmission line and 13 miles shorter than the Alternative 3 transmission line. Sixteen miles of USFS land would be crossed by the Alternative 2a transmission line, similar to Alternative 1, but more than either Alternative 2 (13 miles) or Alternative 3 (4 miles). The Alternative 2a transmission line would cross 43 miles of private land, similar to the Alternative 2 transmission line (44 miles), but considerably less than the Alternative 1 (61 miles) or the Alternative 3 (67 miles) transmission lines. The Alternative 2a transmission line would bypass the unincorporated community of Green Valley, which would be traversed by the Alternative 2 transmission line.

Similar to Alternative 2, new access roads would only be required for the construction of 0.1 mile of the proposed double-circuit transmission line, while approximately one half mile of the Alternative 3 transmission line and seven miles of the Alternative 1 transmission line would require new access roads. Four miles of the Alternative 2a transmission line have been identified for Helicopter Mitigation. Additional Helicopter Mitigation areas may be identified during final design for steep areas with limited access, further reducing the amount of transmission line requiring new access roads. Three-Circuit Tower Mitigation would be utilized for three miles. Temporary and permanent ground disturbance impacts for the Alternative 2a transmission line are estimated to be between 405 and 409 acres and between 59 and 75 acres, respectively, similar to Alternative 2, but less than either Alternative 1 or Alternative 3.

Land Use and Recreation

The Alternative 2a transmission line centerline would be within 1,000 feet of 70 residences, the fewest among the Alternatives. The transmission line centerline would be within an Eligible Wild and Scenic River Corridor for two miles, similar to Alternative 2. Similar to the Alternatives 1 and 2 transmission lines, there would be a single crossing of the Pacific Crest National Scenic Trail. One mile of the transmission line would be within a USFS-designated Back Country Non-Motorized Land Use Zone. To address incompatibilities with the ANF Land Management Plan, Project-specific amendments to the ANF Land Management Plan would be required for Scenic Integrity Objectives, a specific Pacific Crest National Scenic Trail standard, Riparian Conservation Area objectives, and the Back County Non-Motorized Land Use Zone. The Alternative 2a transmission line would be within an Agency Designated Utility Corridor for 14 miles, which represents 59% of the federal land crossed.

Cultural Resources

Because few recent cultural resources surveys have been completed for any of the Alternatives, the analysis presented in this document is largely based on known sites identified in past surveys. Previous surveys conducted on 14 miles of the Alternative 2a transmission line centerline within a 500-foot corridor indicate that the centerline would cross within 500 feet of 15 previously recorded cultural resource sites determined or assumed to be eligible to be listed to the NRHP, similar to Alternative 2 and less than either Alternatives 1 or 3. The Olive Power Plant 1 Transmission line, which would be crossed by the transmission line on all Alternatives, is eligible to be listed to the NRHP and is listed on the California Register of Historic Resources. The centerline of the Alternative 2a transmission line would cross two miles identified with high resource sensitivity levels for paleontological resources, similar to Alternative 2 and less than either Alternatives 1 or 3.

Wildfire and Fuels

With 6.5 miles of modeled high risk conditions for firefighter safety and obstruction to firefighting along the Alternative 2a transmission line, it would have the greatest such mileage of all Alternatives except the Alternative 1 transmission line. The Alternative 2a transmission line, along with the Alternative 2 transmission line, would have the least mileage of modeled very high risk conditions for potential for wildfire, with 2.5 miles modeled as such. With 2.5 miles of modeled very high risk conditions for native vegetation alteration, only the Alternative 2 transmission line would have fewer such miles among the Alternatives.

Traffic and Transportation

The construction of the Alternative 2a transmission line would cause 12 miles of significant traffic impacts, the least among the Alternatives. Additionally, the construction would include five USFS Roads that may require temporary improvements to their Objective Maintenance Levels, more than Alternative 3, the same as Alternative 2, and less than Alternative 1. No public roadway crossings would have poor Levels of Service during construction.

Visual Resources

Thirteen miles of the Alternative 2a transmission line would result in moderate residual visual impacts and five miles would result in high residual visual impacts. Among the Alternatives, only Alternative 2 would have fewer miles of moderate and high residual impacts.. Sixteen miles of the transmission line would be non-compliant with ANF SIOs, the highest mileage of non-compliance with the SIOs among the Alternatives. One mile of the Alternative 2a transmission line would be constructed within an ANF Land Use Zone determined to be not suitable for a major utility corridor. With three miles visible from the PCT within ANF, Alternative 2a would have the greatest visibility from the PCT within ANF among the Alternatives. Thirty-two residences would be within 500 feet of the centerline of the Alternative 2a transmission line; only Alternative 2 would have more residences within 500 feet.

Air Quality and Greenhouse Gas

All Alternatives would exceed air quality emission thresholds for CO, NOx and PM10 in the AVAQMD and for CO, NOX, PM10 and PM2.5 in the SCAQMD. Annual construction emissions for the portion of Alternative 2a on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed *de minimis* threshold for NOx of 10 tons per year.

Biological Resources

Like the Alternatives 2 and 3 transmission lines, the Alternative 2a transmission line would cross four miles with a known federal and State Endangered Species Act-listed wildlife species, the desert tortoise. This would be slightly less than the Alternative 1 transmission line, which would cross mileage with two known listed species, the desert tortoise and the California condor. Similar to the Alternatives 2 and 3 transmission lines, the Alternative 2a transmission line has one mile identified as high avian risk, less high avian risk mileage than the Alternative 1 transmission line. The proposed Alternative 2a transmission line has three miles identified as high condor risk, more than Alternatives 2 and 3, but less than Alternative 1.

Similar to the Alternative 2 transmission line, the Alternative 2a transmission line would cross three miles with known NFS threatened, endangered, or special-status plant species, including areas identified with short-joint beavertail and slender mariposa lily. This is a greater distance with known sensitive plant species than would be crossed by the Alternatives 1 or 3 transmission lines. The Alternative 2a transmission line would cross 161 acres of riparian vegetation, less than the Alternative 3 transmission line and more than the Alternatives 1 and 2 transmission lines. Like Alternatives 2 and 3, the Alternative 2a transmission line would cross 320 acres of Joshua tree woodland, less than would be crossed by the Alternative 1 transmission line. The transmission line would cross 94 RCAs and have 88 acres of RCAs within 500 feet of the centerline, less than Alternative 1, but more than Alternatives 2 and 3. Three miles of the proposed Alternative 2a transmission line are identified as having noxious weeds or invasive species present within the 500-foot corridor, more than for Alternatives 1 and 3.

Geology and Seismicity

The Alternative 2a transmission line centerline would cross 12 miles identified for high levels of earthquake ground shaking, less than all Alternatives except Alternative 2. It would cross perpendicular to the San Andreas fault zone. Two miles of liquefaction hazard zone would be crossed, similar to Alternatives 1 and 2 but less than Alternative 3. The transmission line would cross only 0.2 mile of potential landslides and 2.0 miles of earthquake-induced landslide hazard zones, the same as Alternative 2 and less than either Alternatives 1 or 3. The Alternative 2a transmission line would cross 17 miles identified with high soil erosion potential, the least among the Alternatives.

Water Resources

The Alternative 2a transmission line centerline would include 79 stream crossings and 97 perennial and intermittent streams within the 500-foot corridor, similar to Alternative 2 and less than Alternatives 1 and 3. While all Alternatives would cross the California Aqueduct, an NWI wetland, only Alternatives 2 and 2a would also cross an NWI vegetated wetland. Two miles of Significant Ecological Areas would be crossed, similar to Alternative 2a and less than Alternatives 1 and 3.

Noise

The Alternative 2a transmission line would have the fewest number of residences (70) within 1,000 feet of the alignment centerline, but four miles of the seven miles that would be re-routed around the unincorporated community of Green Valley would be constructed by helicopter. Noise impacts similar to those for the Alternative 2 transmission line would be anticipated for the Alternative 2a transmission line; helicopter construction areas, however, including flight paths, would experience higher construction noise levels of 90 to 100 dB(A) for longer durations. Sensitive receptors near conventional ground construction areas, with the exception of conductor stringing activities, would experience construction noise levels of 65 to 95 dB(A).

Electrical Effects

The Alternative 2a transmission line would be similar to the Alternative 2 transmission line except in the area of the re-route around the community of Green Valley where a new seven-mile transmission line corridor would be created and introduce new electric fields. However, there would be no sensitive receptors in this area. The electric fields from the Alternative 2a transmission line in the area where a new corridor is created (re-route around Green Valley) would be less than for the Alternative 2 transmission line, because it would not be close to the 500 kV PDCI line.

2.6.5 ALTERNATIVE 3

The proposed double-circuit transmission line of Alternative 3 is 76 miles long. It is seven miles shorter than the Alternative 1 transmission line, 13 miles longer than the Alternative 2a transmission line, and 15 miles longer than the Alternative 2 transmission line. Four miles of USFS land would be crossed by the Alternative 3 transmission line, notably less than Alternative 2 (13 miles), Alternative 1 (16 miles), or Alternative 2a (16 miles). The Alternative 3 transmission line would cross the most private land (67 miles) and would result in the acquisition of seven residential structures. While the transmission lines of Alternative 1, Alternative 2 and Alternative 2a would all cross private land (61, 44, and 43 miles, respectively), no other Alternative would result in the acquisition of residential structures.

New access roads would be required for the construction of approximately one half mile of the proposed double-circuit transmission line on Alternative 3, slightly more than the 0.1 mile of transmission line requiring new access roads for Alternatives 2 or 2a, and considerably less than the 7 miles of transmission line requiring new access roads for Alternative 1. Although specific areas for Helicopter Mitigation have not been identified for Alternative 3, Helicopter Mitigation may be identified during final design for steep areas with limited access, reducing the amount of transmission line requiring new access roads. The Three-Circuit Tower Mitigation would be utilized for one-half mile. Temporary and permanent ground disturbance impacts for the Alternative 3 transmission line are estimated to be between 512 and 520 acres and between 91 and 135 acres, respectively, a little less than Alternative 1 but considerably more than Alternative 2 or Alternative 2a.

Land Use and Recreation

The Alternative 3 transmission line centerline would be within 1,000 feet of 242 residences, the most among the Alternatives. The Alternative 3 transmission line would be the only one to cross Mountains Recreation Conservation Authority parkland, with one mile crossed. No Eligible Wild and Scenic River Corridors or USFS-designated Back Country Non-Motorized Land Use Zones would be crossed. The transmission line would cross the Pacific Crest National Scenic Trail three times; it is the only Alternative that would have more than one crossing. To address incompatibilities with the ANF Land Management Plan, Project-specific amendments to the ANF Land Management Plan would be required to address Scenic Integrity Objectives, a specific Pacific Crest National Scenic Trail standard, and Riparian Conservation Area objectives. The Alternative 3 transmission line would be within an Agency Designated Utility Corridor for eight miles, which represents 99% of the federal land crossed.

Cultural Resources

Because few recent cultural resources surveys have been completed for any of the Alternatives, the analysis presented in this document is largely based on known sites identified in past surveys. Previous surveys conducted on 18 miles of the Alternative 3 transmission line centerline within a 500-foot corridor indicate that the centerline would cross within 500 feet of 26 previously recorded cultural resource sites determined or assumed to be eligible to be listed to the NRHP, the most for any Alternative. The Olive Power Plant 1 Transmission line, which would be crossed by the transmission line on all Alternatives, is eligible to be listed to the NRHP and is listed on the California Register of Historic Resources. The centerline of the Alternative 3 transmission line would cross six miles identified with high resource sensitivity levels for paleontological resources, more than Alternatives 2 and 2a and less than Alternative 1.

Wildfire and Fuels

With only 1.5 miles of modeled very high risk conditions for firefighter safety and obstruction to suppression, the Alternative 3 transmission line would have the least such mileage among the Alternatives. With 4 miles modeled as very high risk conditions for potential for wildfire, the Alternative 3 transmission line would have more such mileage than either Alternative 2 or 2a, but less than for Alternative 1. With 9.5 miles of modeled very high risk conditions for native vegetation alteration, only the Alternative 1transmission line would have greater such mileage.

Traffic and Transportation

The construction of the Alternative 3 transmission line would cause 17 miles of significant traffic impacts, more than Alternatives 2 and 2a and less than Alternative 1. The construction would include one USFS Road that may require temporary improvements to its Objective Maintenance Level, the fewest of any Alternative. Two public roadway crossings would have poor Levels of Service during construction; the Alternative 3 transmission line construction would be the only Alternative to include such crossings.

Visual Resources

Twenty-nine miles of the Alternative 3 transmission line would result in moderate residual visual impacts and nine miles would result in high residual visual impacts. Among the Alternatives, it would have the most miles of moderate residual impacts, and the second most miles of high residual impacts. Four miles of the transmission line would be non-compliant with ANF SIOs. No part of the line would be constructed within an ANF Land Use Zone determined to be not suitable for a major utility corridor. With less than one mile visible from the PCT within ANF, Alternative 3 would have the least visibility from the PCT within ANF among the visible Alternatives (Alternative 1 would not be visible). Twenty-three residences, the least among the Alternatives, would be within 500 feet of the centerline of the Alternative 3 transmission line and would be assumed to have visual impacts.

Air Quality and Greenhouse Gas

All Alternatives would exceed air quality emission thresholds for CO, NOx and PM10 in the AVAQMD and for CO, NOX, PM10 and PM2.5 in the SCAQMD. Annual construction emissions for the portion of Alternative 3 on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed *de minimis* threshold for NOx of 10 tons per year

Biological Resources

Like the Alternatives 2 and 2a transmission lines, the Alternative 3 transmission line would cross four miles with a known federal and State Endangered Species Act-listed wildlife species, the desert tortoise. This would be slightly less than the Alternative 1 transmission line, which would cross mileage with two known listed species, the desert tortoise and the California condor. Similar to the Alternatives 2 and 2a transmission lines, the Alternative 3 transmission line has one mile identified as high avian risk, less high avian risk mileage than the Alternative 1 transmission line. The proposed Alternative 3 transmission line has one mile identified as high condor risk, more than Alternative 2, but less than Alternatives 1 and 2a.

Similar to the Alternative 1 transmission line, the Alternative 3 transmission line would cross one mile with known threatened, endangered, or special-status plant species, including areas identified with short-joint beavertail and slender mariposa lily. This is a shorter distance with known sensitive plant species than would be crossed by the Alternatives 2 or 2a transmission lines. The Alternative 3 transmission line would cross 406 acres of mapped riparian vegetation, by far the most among the Alternatives. Like Alternatives 2 and 2a, the Alternative 3 transmission line would cross 320 acres of Joshua tree woodland, less than the Alternative 1 transmission line. Due in part to the fact that the Alternative 3 transmission line would cross only two miles of USFS land, the transmission line would cross only six RCAs, and would have 0.6 acre of RCAs within 500 feet of the centerline, the least among the Alternatives. One-tenth of a mile of the proposed Alternative 3 transmission line is identified as having noxious weeds or invasive species present within the 500-foot corridor, the least among the Alternatives.

Geology and Seismicity

The Alternative 3 transmission line centerline would cross 17 miles identified for high levels of earthquake ground shaking, the most among the Alternatives. It would traverse the San Andreas fault zone diagonally and thus would require a longer distance to traverse the high impact area. Ten miles of liquefaction hazard zone would be crossed, the most among the Alternatives. The transmission line would cross four miles of potential landslides, less than Alternative 1, but more than Alternatives 2 and 2a. It would cross 19 miles of earthquake-induced landslide hazard zones, the most among the Alternatives. The Alternative 3 transmission line would cross 20 miles identified with high soil erosion potential, similar to Alternative 2, more than Alternative 2a, and less than Alternative 1. Only Alternative 3 would cross a distinctive geologic feature in addition to the San Andreas fault zone, with a 0.4-mile crossing of white tuff marker beds.

Water Resources

The Alternative 3 transmission line centerline would include 92 stream crossings and 113 perennial and intermittent streams within the 500-foot corridor, more than Alternatives 2 and 2a, but less than Alternative 1. There would be a single NWI wetland crossed, the California Aqueduct. Five miles of Significant Ecological Areas would be crossed, more than Alternatives 2 and 2a, but less than Alternative 1.

Noise

The Alternative 3 transmission line would have the greatest number of sensitive noise receptors (242 residences) within 1,000 feet of the alignment centerline. Most of these residences would be in the Agua Dulce area. Sensitive receptors near conventional ground construction areas, with the exception of conductor stringing activities, would experience construction noise levels of 65 to 95 dB(A).

Electrical Effects

The Alternative 3 transmission line would be in the same corridor as numerous existing high voltage transmission lines, and the calculated electric fields for the existing and proposed ROWs would be similar because the existing transmission lines produce approximately the same level of electric fields.

2.6.6 ALTERNATIVES COMPARISON SUMMARY TABLE

Table 2-11 below summarizes the impacts within a 500-foot corridor for the proposed new 230 kV double-circuit transmission line for each action Alternative by environmental resource. The No Action Alternative represents a no-build scenario and does not include the 230 kV transmission line. As such, it has not been included in this summary table. As the Project common components (the expansion of the existing Barren Ridge Switching Station, construction of a new Haskell Canyon Switching Station, reconductoring of the existing 230 kV transmission line from the Barren Ridge Switching Station to Rinaldi Substation, and the addition of a new 230 kV circuit on existing towers between the Castaic Power Plant and Haskell Canyon Switching Station) are shared by all action Alternatives, their associated impacts would be the same for each action Alternative; therefore, they have not been included in the summary table.

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TABLE 2-11. COMPARISON TABLE FOR ACTION ALTERNATIVES

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
Jurisdiction Crossed (miles)	*United States Forest Service*	15.9	13.0	15.5	4.4
	Bureau of Land Management	3.7	3.7	3.7	3.7
	State Land	2.4	0.0	0.0	0.0
	Private	60.8	44.0	43.3	67.4
	TOTAL	83.1	60.7	62.5	75.5
Miles Within Access Road Ground Disturbance Categories (percentage of Alternative)	*1. Existing roads or agricultural land, no proposed road widening anticipated*	33.1 (39.8%)	52.4 (86.2%)	50.3 (80.4%)	47.3 (62.5%)
	2. Existing 8-foot wide roads that require an additional 8 feet of width	34.4 (41.3%)	8.3 (13.7%)	8.6 (13.7%)	27.8 (36.7%)
	3. Construct new road on flat terrain (0-10%)	6.4 (7.7%)	0	0	0
	4. Construct new road on sloping terrain (10-20%)	0	0	0	0
	5. Construct new road on steep terrain (20-30%	0.4 (0.5%)	0.1 (0.2%)	0.1 (0.2%)	0.5 (0.7%)
	6. Construct road on very steep terrain (greater than 30%)	0.5 (0.6%)	0	0	0.1 (0.1%)
	Identified Helicopter Mitigation areas	8.4 (10.1%)	0	3.6 (5.8%)	0
Ground Disturbance Estimates	*Miles of transmission line requiring new access roads*	7.3	0.1	0.1	0.6
	Temporary (acres)	576 – 599	398 – 399	405 – 409	512 - 520
	Permanent (acres)	120 – 199	57 – 70	59 – 75	91 – 135
Land Use	*Residences within 1000 Feet of Centerline*	106	156	70	242
	Acquisition of Residential Structures	0	0	0	7
	Number of Pacific Crest Trail Crossings	1	1	1	3
	USFS Back Country Non-Motorized Crossed	2.4 requires a Project-specific ANF LMP amendment	0.0	1.0 requires a Project-specific ANF LMP amendment	0
	Miles of Centerline within Eligible Wild and Scenic River Corridor	0.0	2.7	2.1	0.0
	Miles of State Park/Recreation Area Crossed	2.4 (Centerline) 2.9 (within 500-foot corridor) Castaic Lake State Recreation Area	0.0	0.0	0.0
	Miles of Mountains Recreation and Conservation Authority Parkland Crossed	0.0	0.0	0.0	1.0
	Miles of Centerline within Agency-Designated Utility Corridor	14.2 72.5% of federal land crossed	14.5 86.8% of federal land crossed	13.6 59.4% of federal land crossed	8.0 98.8% of federal land crossed
Cultural Resources	*Number of Eligible Sites (determined or assumed) within 500-foot Corridor, including Resources Listed or Eligible to be listed to the National Register of Historic Places (NRHP) or California Register of Historic Resources (CRHR)*	33 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the NRHP: Old Ridge Route, which includes the National Forest Inn, Halfway Inn, Reservoir Summit Service Center Resources listed to CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line	15 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line	15 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line.	26 (Eligible or assumed eligible to be listed to the NRHP) Resources listed to the CRHR and eligible to be listed to the NRHP: Olive Power Plant I Transmission Line
	Miles of Centerline with Previous Survey within 500-foot Corridor	31.1	11.5	13.6	18
	Miles (Percentage) Surveyed Without Known Resources	10.2 (33%)	7.1 (62%)	6.7 (49%)	15.4 (86%)

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
Wildfire and Fuels	*Miles of Modeled Very High Risk Conditions for Firefighter Safety and Obstruction to Suppression*	10	4.5	6.5	1.5
	Miles of Modeled Very High Risk Conditions for Potential for Wildfire	8	2.5	2.5	4
	Miles of Modeled Very High Risk Conditions for Native Vegetation Alteration	13.5	1.5	2.5	9.5
Paleontological Resources	*Maximum Resource Sensitivity Levels (miles crossed)*	25.2 miles 9.5 miles Castaic Formation 0.3 miles Hungry Valley Formation 0.3 miles Mint Canyon Formation 2.3 miles Peace Valley Formation 0.3 miles Quail Lake Formation 12.2 miles Ridge Route Formation 0.3 miles Saugus Formation	2.4 miles 0.3 miles Anaverde Formation 0.1 miles Castaic Formation 0.3 miles Mint Canyon Formation 1.7 miles Saugus Formation	2.4 miles 0.3 miles Anaverde Formation 0.1 miles Castaic Formation 0.3 miles Mint Canyon Formation 1.7 miles Saugus Formation	6.1 miles 0.3 miles Anaverde Formation 1.5 miles Castaic Formation 4.1 miles Mint Canyon Formation 0.2 miles Saugus Formation
Traffic and Transportation	*Number of Public Roadway Crossings Causing Poor Levels Of Service (LOS) During Construction*	0	0	0	Bouquet Canyon Rd, north of Esquerra (LOS F) and Sierra Highway, north of Davenport Rd (LOS E)
	Miles of Potentially Significant Traffic Impacts	Construction Phase - 20.6 miles Maintenance Phase - 0 miles	Construction Phase - 15.9 miles Maintenance Phase - 0 miles	Construction Phase - 12.1 miles Maintenance Phase - 0 miles	Construction Phase - 17.2miles Maintenance Phase - 0 miles
	USFS Roads That May Require Temporary Improvement to Objective Maintenance Level.(ObML)	8N01 – Liebre Gulch (ObML 2) 8N04 – Old Ridge Route (ObML 3) 8N05 – Tumble Inn Rd (ObML 2) 6N43 – Forest Inn Rd (ObML 2) 5N17 – San Francisquito Motorway (ObML 2) 6N21 – City Highline Rd (or City Highline Motorway Rd) (ObML 2) 5N29 – Dry Canyon Rd (ObML 3) 6N32.3 – Templin Highway (ObML 2)	6N21-City Highline Rd (ObML 2) 5N27-Drinkwater Canyon Rd (ObML 2) 6N04--Leona Divide Fire Rd (ObML 2) 7N02--South Portal Rd (ObML 2) 7N0--Tule Divide Fire Rd (ObML 2)	6N21-City Highline Rd (ObML 2) 5N27-Drinkwater Canyon Rd (ObML 2) 6N04--Leona Divide Fire Rd (ObML 2) 7N02--South Portal Rd (ObML 2) 7N01--Tule Divide Fire Rd (ObML 2)	none
Visual Resources	*Residual Impact Level (miles)*	H – 20.4 M - 18.1 Pacific Crest National Scenic Trail, residences, and ANF Templin vista point	H – 4.5 M – 11.7 Residences, Pacific Crest National Scenic Trail, and ANF Green Valley Camp Site	H – 4.6 M – 12.5 Residences, Pacific Crest National Scenic Trail (generally parallel alignment within the foreground visibility zone for approximately two miles), the ANF Green Valley Camp Site, and transportation viewpoints	H – 9.0 M - 29.1 Residences, Pacific Crest National Scenic Trail, minor trails, Mountains Recreation and Conservation Authority, Ritter Ranch, Veluzat Motion Picture Ranch
	Non-Compliance with ANF SIOs	14.5	13.3	15.5	3.6
	Miles of ANF Land Use Zone Not Suitable for Major Utility Corridor	1.7	0.0	1.0	0.0
	Miles within the ANF visible from the Pacific Crest National Scenic Trail (PCT) within the Foreground	0.0	1.5	2.8	0.8
	Number of Residences within 500 Feet of Centerline	29	63	32	23
Air Quality[2]	*Conformance with South Coast Air Quality Management District (SCAQMD) and Antelope Valley Air Quality Management District (AVAQMD) (NO_x Exceeding Threshold)*	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold. SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds.	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds	AVAQMD: Emissions above the daily CO, NOx, and PM10 threshold SCAQMD: Emissions above the daily CO, NOx, PM10, and PM2.5 thresholds
	Federal Conformity Determination Requirement	Annual construction emissions for the portion of Alternative 1 on federal lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012. In 2013 and 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 2 on federal Lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 2a on federal Lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the de minimis threshold for NOx of 10 tons per year.	Annual construction emissions for the portion of Alternative 3 on federal lands would be less than the de minimis thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed de minimis threshold for NOx of 10 tons per year
Fish and Wildlife Resources	*Total Miles Crossed with Known Federal and State Endangered Species Act (ESA) Listed Species*	4.2	3.7	3.7	3.7

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a¹**	**Alternative 3**
	Miles Crossed with Known Federal and State ESA Listed Species on BLM lands	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known Federal ESA Listed Species on NFS lands	0.3 0.1 NFS (California Condor) 0.2 NFS/CDFG (California Condor)	0.0	0.0	0.0
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private lands	2.2 0.1 Private (California Condor) 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known USFS Special Status Wildlife Species	0.0	0.1 0.1 USFS (Coastal Rosy Boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0
	Miles of Designated USFWS or CDFG Wildlife Habitats	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)
	Miles of Designated BLM Habitat	0.0	0.0.	0.0	0.0
	Miles of Designated NFS Habitat	4.4 NFS GIS modeled Habitat for the Arroyo Toad, Southwestern Willow Flycatcher, and Least Bell's Vireo	4.9 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	4.6 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	1.0 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback
	Miles of Avian Risk	H – 6 M – 19 L – 58	H – 1 M – 7 L – 55	H – 1 M – 11 L – 53	H – 1 M – 11 L – 65
	Miles of Condor Risk	H – 6 M – 33 L – 46	H – 0 M – 10 L – 53	H – 3 M – 9 L – 53	H – 1 M – 25 L – 51
Vegetation	*Miles Crossed with Known USFS Sensitive Plants*	1.3 1.2 Short-joint Beavertail 0.1 Slender Mariposa Lily	3.2 1.2 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	3.1 1.1 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	1.2 1.1 Slender Mariposa Lily 0.1 Slender Mariposa Lily & Short-joint Beavertail
	Miles Crossed with Known Federal and State Threatened, Endangered, Candidate, and Proposed Plant (TECP) Species	0.0	0.0	0.0	0.0
	Miles Crossed with Known Federal Special-status Plant Species on Private lands	0.0	0.0	0.0	0.0
	Acreage of Riparian Vegetation Crossed	136 acres	126 acres	119 acres	154 acres
	Acreage of Joshua Tree Woodland Crossed	334 acres	320 acres	320 acres	320 acres
	Acreage of Riversidian Sage Scrub Crossed	448 acres	92 acres	92 acres	770 acres
	Number of Riparian Conservation Areas (RCA) Crossed	151	66	94	6
	Acres of RCA within 500-foot Corridor	99.5 acres	70.9 acres	87.6 acres	0.6 acres
	Miles with Noxious Weeds or Invasive Species Identified within 500 ft. Corridor during BRRTP Botanical Surveys	1.4	3.6	2.9	0. 1
Geohazards/ Geologic Resources	*Distinctive Geologic Features*	None	None	None	0.4 miles of white tuff marker beds
	Miles Crossed of High Levels of Earthquake Ground Shaking	13.4 Traverses the San Andreas fault zone diagonally and has a longer distance of departure from the high impact areas	9.8 Crosses perpendicular to the San Andreas fault zone and departs from the high ground shaking areas in a shorter distance	11.8 Crosses perpendicular to the San Andreas fault zone	16.9 Traverses the San Andreas fault zone diagonally and has a longer distance of departure from the high impact areas
	Miles Crossed of Liquefaction Hazard Zones (ratio to available data)	1.2 (13.6%)	2 (11.7%)	1.8 (10.2%)	10.4 (24.9%)
	Miles Crossed of Potential Landslides (ratio to available data)	6.6 (25.4%)	0.2 (0.7%)	0.2 (0.7%)	4.1 (11.5%)

Issues or Concerns			Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative			
			Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3
	Miles Crossed of Earthquake Induced Landslide Hazard Zone (ratio to available data)		8.5 (63.6%)	2.0 (16.0%)	1.9 (12.4%)	18.8 (45.1%)
	Miles Crossed of High Soil Erosion Potential (% of total length)		26.0 (31.3%)	20.4 (25.1%)	17.2 (27.6%)	20.2 (26.9%)
Water Resources	*Miles Slope % Crossed*	*0-10*	54.1	44.4	44.3	50.0
		10-20	4.5	3.2	2.8	5.9
		20-30	12.3	7.4	7.4	13.8
		>30	12.3	5.8	8.3	6
	Number of Stream Crossings (perennial & intermittent) by Centerline		146	78	79	92
	Number of Streams within 500-foot Corridor (perennial & intermittent)		168	95	97	113
	Number of National Wetlands Inventory (NWI) wetlands crossed by Centerline or 500-foot Corridor		1 (California Aqueduct)	2 (Vegetated Wetland and California Aqueduct)	1 (Vegetated Wetland) 1 (California Aqueduct)	1 (California Aqueduct)
	Miles of Significant Ecological Areas (SEA) crossed		8.1	2.6	2.4	4.7

NOTES:
NA = Not applicable
M=Moderate impact
H=High impact
L=Low impact

[1] Environmental Resources are summarized from Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station.

[2] All other annual emission standards are met.

2.7 NEPA FEDERAL AGENCY PREFERRED ALTERNATIVE

Pursuant to NEPA Regulations (40 CFR 1505.2(b)), the environmentally preferable alternative or alternatives must be identified in the Record of Decision (ROD) for the Project. In this Final EIS/EIR, the BLM and USFS have identified the No Action Alternative and Alternative 2 as environmentally preferable. The No Action Alternative avoids the impacts associated with the action Alternatives and would be the environmentally preferable alternative among all the Alternatives. No Action does not meet the purpose and need of the Project, including the transmission and storage of renewable energy. Alternative 2, the Proposed Action, has the least overall impacts of the action Alternatives, and is the environmentally preferable action alternative.

NEPA Regulations require the lead agency to identify the agency's preferred alternative, if one of more exists, in the Draft EIS (40 CFR 1502.14). The BLM and USFS have selected Alternative 2, the Proposed Action, as the agency preferred alternative.

2.8 CEQA ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Consistent with CEQA Guidelines Section 15126.6(e)(2), Alternative 2, the Proposed Action, has been identified by the CEQA Lead Agency, LADWP, as the environmentally superior Alternative. For a full comparison of the Alternatives, please refer to Section 2.6, Alternatives Comparison Summary, and Table 2-11, Comparison Table for Action Alternatives, in this chapter of this Final EIS/EIR.

Alternative 2 has several unique advantages, including containing all Project components within a single utility corridor within the ANF and the immediate surrounding communities, which would limit the impact footprint of the Project. The Alternative 2 230 kV double-circuit transmission line would be located on federal land entirely within a federally designated utility corridor identified by the 2009 West-Wide Energy Corridor Final Programmatic EIS (PEIS). Alternative 2 would also consolidate all Project components with existing LADWP facilities, minimizing ongoing operation and maintenance impacts. Additionally, Alternative 2 would utilize approximately two miles of existing four-circuit structures in the southern portion of the ANF for the proposed transmission line, reducing the need for new towers. The consolidation of facilities would allow LADWP to utilize the existing network of access roads, resulting in the least ground disturbing impacts among the action Alternatives. The Alternative 2 230 kV double-circuit transmission line would traverse the unincorporated community of Green Valley. To minimize impacts to this community, Three-Circuit Tower Mitigation would be implemented, combining the existing BR-RIN line onto a single tower with the proposed transmission line.

Alternative 1 would include the longest transmission line and greatest temporary and permanent ground disturbing impacts among the action Alternatives. It would also create impacts to the only cultural resource in the Project study area currently listed on the National Register of Historic Places, the Old Ridge Route and its contributing components. Additionally, it would create unique impacts to the Castaic Lake State Recreation Area.

Alternative 2a, similar to the Proposed Action (Alternative 2), would locate a majority of the transmission line on federal land within the federal corridor identified in the West-Wide Corridor

PEIS, but would avoid the unincorporated community of Green Valley by exiting the corridor and creating a new pathway through the ANF for four miles before re-joining the federal corridor. The Alternative 2a transmission line would not parallel an existing transmission line or the proposed reconductoring activities for those four miles, resulting in construction, operation, and maintenance impacts in additional areas of the ANF. Importantly, Alternative 2a would result in significant and unavoidable impacts to firefighting abilities within the ANF, by creating an indefensible Transmission Line Bounded Island of forest land between the existing BR-RIN and proposed transmission lines, where firefighting activities would be severely limited. Such an indefensible island would permanently put the unincorporated community of Green Valley, as well as the unincorporated communities of Lake Hughes and Elizabeth Lake, at higher risk from wildfires.

Alternative 3 would minimize the Project footprint on the ANF, but would impact the rural residential communities through which the proposed transmission line would traverse. It is the only Alternative that would require the acquisition of private residences. Seven residences would need to be acquired for the construction of the proposed 230 kV double-circuit transmission line associated with Alternative 3. It is also the only Alternative that would impact Mountains Recreation Conservation Authority land.

CHAPTER 3: ENVIRONMENTAL SETTING

3.1 INTRODUCTION

This chapter provides a description of the existing environment potentially affected by the construction, operation, maintenance, and decommissioning of the Barren Ridge Renewable Transmission Project (BRRTP). As described in Chapter 2, five Project Alternatives—including the Proposed Action, three additional action Alternatives, and the No Action Alternative (Proposed Action and Alternatives)—are analyzed in detail in this Final EIS/EIR. The Proposed Action and action Alternatives would consist of the following components:

(1) Expansion of the existing Barren Ridge Switching Station.
(2) Construction of a new electrical switching station in Haskell Canyon.
(3) Construction of a new double-circuit 230 kilovolt (kV) transmission line from the Barren Ridge Switching Station to a new switching station located within Haskell Canyon. The length of the new transmission line would vary for each action Alternative and would range from 61 to 83 miles.
(4) Upgrade of 76 miles of the existing Barren Ridge – Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation.
(5) Addition of 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant.

The action Alternatives would cross a variety of public and private land within the jurisdictions of multiple federal, State and local agencies or political subdivisions. Potential impacts from the Proposed Action or an Alternative are addressed in Chapter 4 of this Final EIS/EIR.

3.1.1 ENVIRONMENTAL SETTING OVERVIEW

For the purpose of this Final EIS/EIR, and pursuant to the California Environmental Quality Act (CEQA) Guidelines (Section 15125(a)), the environmental setting used to determine the potential impacts associated with the Proposed Action and Alternatives is based on the environmental conditions that existed in the Project area beginning at the time the Notice of Preparation was distributed and the Notice of Intent was published. The National Environmental Policy Act (NEPA) requires that an EIS shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration (40 CFR 1502.15).

The "Environmental Setting" section in each resource discussion describes existing conditions in the Project area at the time this Final EIS/EIR analysis was conducted. Except where indicated differently, the environmental setting reflects conditions in the Project area under the CEQA baseline identified above. The identification of impacts for the Alternatives is based on changes between existing conditions described in the "Environmental Setting" section and future conditions that could occur with the implementation of each Alternative.

The environmental setting that may be affected by the Proposed Action and Alternatives is described in terms of two environments:

Human Environment—those physical, social, and economic factors potentially affecting the quality of living conditions, employment, and health of those inhabiting, working in, or visiting the Project area:

- Air quality
- Noise
- Land use
- Agriculture
- Recreation
- Public services and utilities
- Hazardous waste and materials
- Traffic and transportation
- Visual resources
- Cultural resources
- Wildfire and fuels
- Electrical Effects
- Socioeconomics

Natural Environment—those resources related to all living and non-living things occurring naturally in the Project area:

- Biological resources (vegetation, wildlife, riparian, and threatened, endangered, and other special-status species)
- Earth Resources (geology, seismicity, soils, mineralogy, and paleontology)
- Water resources (hydrology and wetlands)

Resources within these two basic environments that may be affected by the Proposed Action or Alternatives were inventoried to describe and establish an environmental baseline against which to measure and evaluate the potential incremental impacts that may be caused by the BRRTP. Methods of inventory varied among the various resources; therefore, the inventory areas and methods are summarized in each resource section. The areas covered by each resource investigation along each of the Alternative routes are described as study corridors. The study corridors identified during the siting and routing evaluation should not be confused with agency planning or designated utility corridors, used by the USFS, BLM, and other federal land management agencies to consolidate utility rights-of-way. In some cases, however, the agency utility corridors and the study corridors do correspond.

Detailed inventory results for each resource are contained in the BRRTP Technical Reports in Volumes III (Human Environment) and IV (Natural Environment). The Technical Reports also include detailed text, maps (see Volume V), and data tables identifying the locations of environmental resource features mile by mile and values for each Project component of the action Alternatives, including the assumed centerline of the new 230 kV transmission line. The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

3.2 HUMAN ENVIRONMENT

3.2.1 AIR QUALITY

Introduction

The purpose of the air quality analysis is to evaluate the potential for impacts associated with construction and operation of the Proposed Action, along with each of the proposed transmission line Alternative corridors and proposed new switching station, on the ambient air quality. The air quality analysis shall 1) present the regulatory framework; 2) provide an overview of the technical methodology used in collecting baseline conditions and evaluating impacts; 3) examine the affected environment with respect to air quality; 4) describe the potential impact on air quality from construction and operation of the Proposed Action and Alternatives; 5) evaluate the level of potential impacts on air quality from construction and operation of the Proposed Action and Alternatives; and 6) present specifically recommended mitigation measures, if needed, to reduce potential impacts.

Recent regulatory action on both the federal and State level addresses emissions of greenhouse gases and potential global climate change impacts. Under State CEQA guidelines, global climate change is addressed as a cumulative impact.

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Air Quality Technical Report, contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Air Quality Technical Report, please refer to that report for more detailed information on the Proposed Action and Alternatives' effects on air quality and climate change.

Overview of Methodology and Analysis Area

The BRRTP would fall within portions of two different air basins. These are the Mojave Desert Air Basin (MDAB) and the South Coast Air Basin (SCAB). The MDAB includes the desert portions of Kern, Los Angeles, and San Bernardino Counties and the Palo Verde Valley portion of Riverside County. The SCAB includes the non-desert portions of Los Angeles, San Bernardino and Riverside County, and Orange County. These air basins are further broken down into planning areas by the U.S. Environmental Protection Agency (EPA) based upon various emission problems, political boundaries or watershed boundaries.

The EPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. Under the CAA, the EPA established the National Ambient Air Quality Standards (NAAQS), which identify the emission thresholds for criteria pollutants (see Table 3.2.1-3). Criteria pollutants regulated under these standards include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and sulfur dioxide (SO_2). O_3 is not a directly emitted pollutant, but is formed through reactions in the atmosphere between ozone "precursors" (oxides of nitrogen [NO_X] and reactive organic gases [ROG]) catalyzed by the effects of sunlight. The EPA classifies areas as "attainment," "nonattainment," or "unclassified" depending on whether ambient air quality data collected in the area indicate that the area shows compliance with the NAAQS (attainment), shows noncompliance with the NAAQS (nonattainment), or whether there are insufficient data to make a determination of the area's classification relative to the NAAQS (unclassified).

The EPA has transferred a number of responsibilities to the states and in most cases, regional air quality management districts. The BRRTP area falls within three different regional air districts. The Antelope Valley Portion of Los Angeles County is in the Antelope Valley Air Quality Management District (AVAQMD). The non-desert portion of Los Angeles County is within the SCAQMD. The eastern (desert) portion of Kern County is within the East Kern Air Pollution Control District (EKAPCD).

Table 3.2.1-1 presents a summary of the attainment status of the areas in which the BRRTP would be located.

TABLE 3.2.1-1. ATTAINMENT STATUS – BRRTP AREAS

Pollutant	Attainment Status South Coast Air Basin		Attainment Status Mojave Desert Air Basin	
	Federal	State	Federal	State
Ozone – 1 hour	N/A	Extreme Nonattainment	N/A	Extreme Nonattainment (AVAQMD); Moderate Nonattainment (EKAPCD)
Ozone – 8 hour	Extreme Nonattainment[1]	Nonattainment	Severe Nonattainment[1] (AVAQMD) Moderate Nonattainment (EKAPCD)	Nonattainment
CO	Attainment	Attainment	Unclassified/Attainment	Unclassified/Attainment
NO_2	Attainment	Attainment	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment	Attainment	Attainment
PM_{10}	Serious Nonattainment	Nonattainment	Unclassified	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment	Unclassified	Unclassified

[1] The AVAQMD is in the process of being redesignated as a severe nonattainment area for O_3.

One of the pollutants of concern that is typically generated during construction is particulate matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of ten microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations and windblown dust. Human activities that contribute to the PM_{10} emissions include combustion sources such as stack emissions, diesel exhaust and smoke from prescribed fire and wild fire, fugitive dust sources such as construction and demolition activities, off highway vehicle (OHV) travel, unpaved public roads and parking lots, industrial activities, OHV open areas and military activities. Both PM_{10} and $PM_{2.5}$ can either be emitted directly, or formed from the interaction of precursor pollutants such as NO_X, SO_X, ROG, and ammonia in the atmosphere.

One of the reasons for the concern with PM_{10} and $PM_{2.5}$ emissions is their adverse effect on human health. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs. All of the PM_{10} particles are considered respirable particulate because they can be inhaled into the nose, throat and/or lungs.

Fine PM_{10} particles are the largest threat to health because they tend to deposit in the air sacks. In addition, many of the fine particles are from precursor emissions, many of which are toxic or carcinogenic. Fugitive dust is primarily coarse particulate that is not as likely to contain toxic materials.

In addition to particulate matter, toxic air contaminants (TACs) may be emitted from construction or operational activities. TACs are air contaminants that are not covered under the NAAQS or California Ambient Air Quality Standards (CAAQS) that are considered to have the potential to cause adverse health effects upon exposure. The California Air Resources Board (ARB) and the California Office of Environmental Health Hazard Assessment have the responsibility to identify TACs within the state of California. TACs are considered to have no safe level of exposure. There are currently 250 substances that are identified by the state of California as TACs. These include substances that are emitted from industrial processes, as well as substances that are emitted by vehicles and heavy equipment. TACs that may be emitted during construction include pollutants such as diesel particulate matter.

The goal of the air quality analysis was to identify air emission sources associated with construction and operation of the Proposed Action and Alternatives. The analysis involved identification of the portions of the Proposed Action and Alternatives construction that would fall within the Mojave Desert Air Basin and the South Coast Air Basin, and within the jurisdiction of the East Kern Air Pollution Control District, the Antelope Valley Air Quality Management District, and the South Coast Air Quality Management District.

Construction emissions would be generated from the use of heavy construction equipment, emissions from light- and heavy-duty trucks traveling to the construction sites, and emissions from worker vehicles traveling to staging areas and construction sites. For those portions of the route that require the use of helicopters, emissions would be generated from the helicopter itself. Fugitive dust emissions would also be generated from equipment and vehicles traveling on unpaved surfaces and surface disturbance required for construction.

Emission calculations were based on the following sources:

- South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook
- SCAQMD OFFROAD Emission Factors for heavy construction equipment
- EMFAC2007 Emission Factors for vehicle emissions
- EDMS Emission Factors for helicopters
- U.S. Environmental Protection Agency (EPA) AP-42 Emission Factors

The construction schedule provided information on the number and type of construction equipment, workforce requirements, and truck trips, based on the following construction phases:

- Construction of the new 230 kV line from Barren Ridge to the Haskell Canyon Switching Station.
- Reconductoring of the existing 230 kV line from the Barren Ridge Switching Station to the Rinaldi Substation.
- Construction of the new 230 kV line from the Haskell Canyon Switching Station to the Castaic Power Plant.

- Construction of the Haskell Canyon Switching Station.
- Expansion of the existing Barren Ridge Switching Station.

The operational emissions from the Proposed Action or an action Alternative would comprise occasional inspection and maintenance activities (line patrols assumed to occur annually at a minimum) and no new stationary-source operating emissions would be generated as part of this Project. Operational emissions would therefore increase only marginally as a result of the implementation of the Proposed Action or an action Alternative. Operational emissions would not increase as a result of the No Action Alternative.

Further information on methodology is provided in the Air Quality Technical Report in Volume III.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

The federal action portion of the Project must demonstrate that it conforms with the most recently approved State Implementation Plan (SIP). The portion of the federal action that would traverse the Mojave Desert Air Basin (MDAB) would be within the jurisdiction of the EKAPCD and the AVAQMD. The most recently EPA-approved SIP for the EKAPCD is the 1994 SIP, which was approved by the EPA in 1997. The EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (AQAP) (EKAPCD 1992). The most recent Implementation Progress Report on the Plan was prepared by the EKAPCD in 2005 (EKAPCD 2005). That document demonstrated that the EKAPCD has adopted all control measures identified in the AQAP into its Rules and Regulations, and is demonstrating further progress toward attainment of the ambient air quality standards.

The AVAQMD's most recently EPA-approved SIP for the AVAQMD is the 1996 SIP, which was approved by the EPA in 1997. The AVAQMD adopted its 2004 Ozone Attainment Plan (AVAQMD 2004) on April 20, 2004, and has developed a Draft 2008 Federal 8-Hour Ozone Attainment Plan (AVAQMD 2008) to address air quality attainment in its portion of the Western Mojave Desert nonattainment area. In the Draft Plan, the AVAQMD does not propose to adopt any additional control measures for direct ozone precursor reduction purposes. The AVAQMD's portion of the 8-hour O_3 plan has been submitted to the ARB and was approved by the ARB in July 2008. The AVAQMD has adopted fugitive dust control measures in its Rule 403. As required by Senate Bill 656, the AVAQMD is also committed to adopting all feasible measures to control emissions identified by the State. The State requires that all feasible measures be analyzed, and the analysis may result in a rule adoption action depending on the outcome of the feasibility analysis. One of the measures under consideration is revision of the Fugitive Dust requirements (AVAQMD Rule 403) to include additional feasible measures. The AVAQMD is in the process of evaluating cost-effectiveness of additional fugitive dust control measures and revising Rule 403 to reflect the findings of the analysis; a specific date for completion of the revision of the rule is not available.

The portion of the federal action that would traverse the SCAB would be within the jurisdiction of the SCAQMD. The most recently EPA-approved SIP for the SCAB is the 1996 SIP, which was approved by the EPA in 1997, and subsequently updated in 1999. The SIP update has been partially approved by the EPA, pending revisions to the inspection and maintenance program for mobile sources.

The most recent air quality management plan adopted by the SCAQMD for the SCAB is the 2007 Air Quality Management Plan (AQMP) (SCAQMD 2007), which was adopted by the SCAQMD Governing Board on June 1, 2007. The 2007 AQMP focuses on strategies for attainment and maintenance of the ozone and $PM_{2.5}$ standards. The AQMP was submitted to the ARB in 2007, and approved by the ARB on November 28, 2007, following which it was submitted to the EPA for approval. The EPA has not yet acted on the SCAB portion of the SIP, pending action by the ARB to adopt final rules that apply to state-wide emission sources. The SCAB's PM_{10} maintenance plan has been submitted to the ARB, and the ARB is currently reviewing the plan.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

The addition of a 230 kV circuit would occur between the proposed Haskell Canyon Switching Station and Castaic Power Plant. This Project component would be located entirely within the SCAB, under the jurisdiction of the SCAQMD. As discussed below, the SCAB is designated as an extreme nonattainment area for the NAAQS for O_3, a serious nonattainment area for the NAAQS for PM_{10}, a nonattainment area for the NAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SCAB is also considered a maintenance area for CO.

Reconductoring of BR-RIN Transmission Line

Reconductoring of the BR-RIN transmission line would follow a route similar to that of Alternative 2, and would cross or run adjacent to land uses similar to Alternative 2 as described below. Reconductoring would occur in both the MDAB and the SCAB, under the jurisdiction of all three air districts.

New Haskell Canyon Switching Station

The proposed new Haskell Canyon Switching Station site is located at the southern terminus of the transmission route in an unincorporated portion of Los Angeles County, northerly of the city of Santa Clarita, in the unincorporated community of Bouquet Canyon in the Santa Clarita Valley. The site would be situated on LADWP-owned land generally west of Pettinger Canyon and north of Dry Canyon Reservoir near the southern border of the ANF. This Project component would be located entirely within the SCAB, under the jurisdiction of the SCAQMD. As discussed below, the SCAB is designated as an extreme nonattainment area for the NAAQS for O_3, a serious nonattainment area for the NAAQS for PM_{10}, a nonattainment area for the

NAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SCAB is also considered a maintenance area for CO.

Expansion of Barren Ridge Switching Station

The Barren Ridge Switching Station expansion area would be located at the northern terminus of the transmission route adjacent to the existing switching station on vacant land owned by LADWP. The Barren Ridge Switching Station expansion would occur entirely within the MDAB in Kern County, under the jurisdiction of the EKAPCD. As discussed below, this area is designated as a moderate nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

The 230 kV transmission line in Alternative 1 would originate at the Barren Ridge Switching Station located in Kern County. The Alternative 1 transmission line would traverse a portion of Kern County within the MDAB, in the area under the jurisdiction of the EKAPCD. As discussed below, this area is designated as a moderate nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The Alternative 1 transmission line would continue southwest parallel to the Los Angeles Aqueduct to Lancaster Road. The route would cross from Kern County into Los Angeles County and into the jurisdiction of the AVAQMD. This area is designated as a severe nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The transmission line would then cross into the Angeles National Forest (ANF) and cross the boundary between the AVAQMD and SCAQMD's jurisdiction into the SCAB. The SCAB is designated as an extreme nonattainment area for the NAAQS for O_3, a serious nonattainment area for the NAAQS for PM_{10}, a nonattainment area for the NAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SCAB is also considered a maintenance area for CO.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

The 230 kV transmission line in Alternative 2 would originate at the Barren Ridge Switching Station located in Kern County. The Alternative 2 transmission line would traverse a portion of Kern County within the MDAB, in the area under the jurisdiction of the EKAPCD. As discussed below, this area is designated as a moderate nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The transmission line would continue south-southwest within the existing utility corridor and land designated as an energy corridor. The route would cross from Kern County into Los Angeles County and into the jurisdiction of the AVAQMD. This area is designated as a severe nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The Alternative 2 transmission line would then cross into the ANF and cross the boundary between the AVAQMD and SCAQMD's jurisdiction into the SCAB. The SCAB is designated as an extreme nonattainment area for the NAAQS for O_3, a serious nonattainment area for the NAAQS for PM_{10}, a nonattainment area for the NAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SCAB is also considered a maintenance area for CO.

Alternative 2a

The Alternative 2a 230 kV transmission line would be 63 miles long and would follow the same route as the Proposed Action, except that a 7 mile portion would be located to the north and around the unincorporated community of Green Valley (Green Valley Re-route). The Green Valley Re-route would occur within the jurisdictional boundaries of the ANF (Santa Clara/Mojave Rivers Ranger District) and Los Angeles County. The Green Valley Re-route would be located entirely within the SCAB, under the jurisdiction of the SCAQMD.

Alternative 3

The Alternative 3 230 kV transmission line would originate at the Barren Ridge Switching Station located in Kern County. The transmission line would traverse a portion of Kern County within the MDAB, in the area under the jurisdiction of the EKAPCD. As discussed below, this area is designated as a moderate nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The Alternative 3 transmission line would continue south-southwest within the existing utility corridor and land designated as an energy corridor. The route would cross from Kern County into Los Angeles County and into the jurisdiction of the AVAQMD. The transmission line would proceed south for six miles where it would then turn to the southeast towards California State Route 138 and travel through portions of the cities of Lancaster and Palmdale, and the unincorporated community of Quartz Hill. This area is designated as a severe nonattainment area for the NAAQS for O_3, and a nonattainment area for the CAAQS for O_3 and PM_{10}.

The Alternative 3 transmission line would then turn in a west-southwesterly direction towards the Vasquez Canyon Road area. The transmission line would then generally proceed in a westerly direction towards the proposed Haskell Canyon Switching Station site. The route would cross the boundary between the AVAQMD and SCAQMD's jurisdiction into the SCAB. The SCAB is designated as an extreme nonattainment area for the NAAQS for O_3, a serious nonattainment area for the NAAQS for PM_{10}, a nonattainment area for the NAAQS for $PM_{2.5}$, and a nonattainment area for the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The SCAB is also considered a maintenance area for CO.

Table 3.2.1-2 presents a summary of the air basins and jurisdictions for the Project components of each action Alternative.

TABLE 3.2.1-2. BRRTP COMPONENTS BY JURISDICTION

Project Component	MDAB - EKAPCD	MDAB - AVAQMD	SCAB - SCAQMD
Project Components Common to All Action Alternatives			
New 230 kV Circuit			X
Reconductoring of BR-RIN Transmission Line	X	X	X
Haskell Canyon Switching Station			X
Expansion of Barren Ridge Switching Station	X		
New 230 kV Double-Circuit Transmission Line in Each Action Alternative			
Alternative 1	X	X	X
Alternative 2	X	X	X
Alternative 2a	X	X	X
Alternative 3	X	X	X

3.2.2 NOISE

Introduction

This section describes audible and radio noise in the area of the Proposed Action and Alternatives. Specifically, this section presents the conditions of the affected environment, and describes regulations, plans, and standards that pertain to ambient noise and noise from the transmission facilities in the BRRTP area.

The noise assessment shall: 1) provide an overview of the technical methodology used in collecting baseline conditions; 2) examine the affected environment with respect to noise; and 3) present the regulatory framework.

Overview of Methodology and Analysis Area

Corona noise results when the voltage gradient surrounding energized conductors or hardware exceeds the breakdown strength of air, resulting in electrical discharges. The voltage gradient can be perturbed and enhanced by surface imperfections such as water drops, insects, and scarred metal protrusions. The discharge activity and intensity depend on the type and number of discontinuities and how close the unperturbed surface gradient approaches the corona inception threshold.

Corona is a recognized phenomenon and it is considered in the design of electrical hardware and equipment as well as in the specific design of the BRRTP transmission line. The primary corona effects that are addressed in this investigation are Audible Noise (AN) and Radio Noise (RN). RN is composed of two components, Radio Interference (RI) and Television Interference (TVI).

Audible Noise

Transmission lines can generate a small amount of sound energy. The audible noise produced by corona from AC transmission lines is generally highest in fog or rain (considered as foul weather) and decreases during fair weather. AN from line sources is composed of two components: 1) A broadband (random) component characterized as having high frequency content (different from more common environmental noises), and 2) Pure tone (hum) components: most noticeably, second and fourth harmonics of the power frequency are superimposed on the broadband noise.

Sound magnitudes are measured in decibels (dB). In terms of the sensitivity of human hearing, there are generally three noise rating scales: the A-weighted, B-weighted, and C-weighted scales. The A-weighted sound level (dB(A)) is used as the noise rating scale for power line noise as it most accurately represents human sensitivity to sound levels.

Concern about noise is related to negative impacts on humans and animals. Human response to noise is most commonly expressed as an annoyance, and the level of annoyance may be affected by the intensity of the noise, its frequency (pitch), its duration of exposure, and/or its recurrence. Ambient noise is the total noise in an environment and usually comprises sounds from many sources.

Typical ranges of ambient sound levels for some common sources of noise are shown in Table 3.2.2-1.

TABLE 3.2.2-1. AMBIENT NOISE SOURCES

SOURCES OF NOISE	AMBIENT NOISE LEVEL (dB(A))
Loud Automobile Horn	110 to 120
Inside Bus	80 to 90
Average traffic on Street Corner	70 to 80
Conversational Speech	60 to 70
Typical Business Office	50 to 60
Living Room Suburban Area	40 to 50
Library	30 to 40
Bedroom at Night	20 to 30

Audible noise decreases with distance from the line. Each transmission line phase conductor may be considered as a separate line source. Beyond a distance of approximately 50 feet from the outer phase conductor, this conductor would dominate and completely obscure the contributions of the other phase conductors. Overall, the attenuation of noise from the transmission line is somewhat greater than 3 dB per doubling of the distance from the line.

One way that AN levels are typically described is in statistical terms. For example, the L_{50} sound level is the noise level exceeded 50 percent of the time. It is also common to evaluate sound levels over time. The time-variant noise levels take into account all types of noise sources, including what is produced from foul weather (such as rain). L_{eq} is the equivalent, average sound level of a varying sound over a period of time, typically a period of 24 hours. The Day-Night Average Sound Level (L_{dn}) is a 24-hour sound level that accounts for noise intrusions at night by adding a 10-dB(A) penalty to all sounds occurring between 10 p.m. and 7 a.m. In California, the Community Noise Equivalent Level (CNEL) is similar to the L_{dn}, except that it further adds a 5-dB(A) penalty to all sounds occurring between 7 p.m. and 10 p.m.

Radio Noise

Radio Interference (RI) refers to interference primarily in the 535 to 1605 kilohertz (kHz) frequency range, and Television Interference (TVI) refers to interference in the 54 to 88 megahertz (MHz) range. Corona and gap discharges are two potential sources of interference from the proposed 230 kV line. Corona discharges induce trains of short-duration current pulses that propagate along the line conductors, away from the point of generation. Gap discharges result from electrical discharges between broken or poorly fitting hardware, such as insulators, clamps and brackets.

RI and TVI are measured in decibels and are referenced to a signal input of one microvolt tuned to a certain measurement frequency (the unit is decibel microvolt per meter or dBμV/m). The RI level of the line at any particular location and measurement frequency varies based on many factors, primarily weather conditions and time. RI is described in statistical terms and is typically denoted as the percentage of the total time that the RI level is less than a certain level. For example, an RI level often referred to is the "50 percent fair weather level" (L_{50}), meaning that the RI from the line can be expected to be less than this level for 50 percent of the total fair weather period. TVI is strictly a foul weather phenomenon and is characterized on the basis of an L_{50} foul weather level.

The criteria for establishing limits of interference take into account: 1) the definition of the quality of radio/television service to be protected; 2) the zone in which a specified quality of service is to be protected; and 3) the fraction of time during a year that a specified quality of service is protected. The FCC (Federal Communications Commission) governs the radio and television interference from power transmission systems, simply by saying there can be no harmful interference.

Numerous tests conducted in the past in North America and other parts of the world have identified signal-to-noise ratios (SNRs) for different reception grades (that refer to quality of reception or degree of annoyance). For example, the Grade A (or 5) indicates a strong radio signal, relating to an SNR of 31 dB or greater, which signifies entirely satisfactory service.

This data relating to reception quality is based upon the results of listening tests performed by an Institute of Electrical and Electronic Engineers (IEEE) committee and is summarized in Table 3.2.2-2. The original IEEE data was based upon comparing quasi-peak (QP) signals to quasi-peak noise (quasi-peak refers to measurement of slightly lower than peak levels for signal strength and noise). Based on changes to measurement procedures, the grades are now based upon signals measured with a root mean square (RMS) average field intensity (FI) detector, based on the FCC preference for measuring AM radio signal strength. Also, the new standard for measuring QP signals is from International Electrotechnical Commission/ Special International Committee on Radio Interference (IEC/CISPR) Publication 16, whereas the old QP detector used American National Standards Institute (ANSI) standards. This older detector can be used, but the values must be reduced by 2 dB to agree with the present standards.

TABLE 3.2.2-2. AM RADIO RECEPTION QUALITY VERSUS SIGNAL-TO-NOISE RATIO[1]

CODES	DESCRIPTION	SIGNAL-TO-NOISE RATIO (dB)[1]
A (5)	Entirely satisfactory	31 or greater
B (4)	Very good, background unobstructive	26 or greater
C (3)	Fairly satisfactory, background plainly evident	21 or greater
D (2)	Background very evident, but speech easily understood	15 or greater
E (1)	Speech understandable with severe concentration	4 or greater
F (0)	Speech unintelligible	Below 4

[1]Values presented are based on the IEC/CISPR Pub 16 standards for the measurement of QP signals.

The quality of reception in the presence of man-made noise is primarily a function of the SNR at the receiver's antenna. Typically the SNR is determined based on measurements of the radio or television signal and the noise from the transmission line at a particular location. The radio and television interference calculations for the proposed 230 kV line provide a basis for the measurement of the radio and television signals in order to evaluate the SNRs.

Interference generated at television frequencies from power lines and stations may be due to corona or gap type discharges. At the present time, there are no standards established for the measurement of TVI from power transmission systems. Early studies on the subjective evaluation of picture quality have been made using a random noise environment. The results of these studies have not been sufficient either to standard power line TVI measurements or to establish criteria for acceptable signal-to-noise ratios.

Television services are classified in two categories: Grades A and B. An FCC television service of Grade A signal level was assumed for evaluating TVI generated by the proposed line, as this Grade is protected by FCC rules and has the lowest signal-to-noise ratio allowed. Grade A levels are 68 dBμV/m for channels 2 through 6, 71 dBμV/m for channels 7 through 13, and 74 dBμV/m for channels 14 through 83. For the Grade A signal levels, an SNR of at least 30 is required if corona noise is not to cause objectionable interference. An SNR level from 20 to 30 would have somewhat-to-definitely objectionable television interference levels.

Regional Setting

The following section discusses the current noise environment within and adjacent to the facilities that would be associated with the Proposed Project and alternatives.

The Proposed Action and Alternatives, with the exception of the reconductoring proposed south of Haskell Canyon Switching Station, are located in primarily rural areas with few activities that generate substantial sustained noise events. South of Haskell Canyon Switching Station, the Project would be located in an urban environment. Community noise levels are usually closely related to the intensity of nearby human activity.

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[1] The latest reception quality versus SNR plot (from the Electric Power Research Institute [EPRI] "Red Book" 3rd Edition, Chapter 9), from which Table 3.2.2-2 was derived, is shown.

Noise levels are generally considered low when ambient levels are below 45 dB(A), moderate in the 45 to 60 dB(A) range, and high above 60 dB(A). In small towns or wooded and lightly used residential areas, day-night levels can be below 35 dB(A). Levels around 75 dB(A) are more common in busy urban areas (e.g., downtown areas), and levels up to 85 dB(A) occur near major freeway and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health (EPA 1974).

The surrounding land uses dictate what future noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night differences can be considerably less. Nighttime noise in areas with full-time human occupation is often considered objectionable because of the likelihood of disrupting sleep. Noise levels above 45 dB(A) at night can result in the onset of sleep interference effects. At 70 dB(A), sleep interference effects become considerable (EPA 1974).

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

Reconductoring

Reconductoring of the existing BR-RIN would occur from Barren Ridge Switching Station that is located 12 miles north of the City of Mojave to the Rinaldi Substation located in the City of San Fernando. Because the reconductoring corridor from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station is identical to the proposed 230 kV transmission line corridor for Alternative 2 analyzed in detail below, this analysis focuses only on the reconductoring section between the proposed Haskell Canyon Switching Station and the existing Rinaldi Substation.

Noise Sources

From the proposed Haskell Switching Station to the Rinaldi Substation, the transmission line corridor would be located in an urban environment, and major noise sources include roadways and rail systems. During peak use periods, State Highways 14 and 210 and Interstate 10 would be expected to produce traffic noise levels in the range from 80 to 90 dB(A) at 50 feet from the shoulder. The Santa Clarita Metrolink Rail and Sylmar/San Fernando Metrolink Rail would be in close proximity to the southern portion of the reconductoring corridor and expected to produce noise levels of 60 to 70 dB(A) from 50 feet.

There are 11 Federal Aviation Administration (FAA)-registered air facilities within 20,000 feet of the reconductoring corridor that also contribute to the existing noise environment and are listed below. The California Division of Aeronautics is in charge of enforcing airport noise regulations for all airports within the State of California and airports are not to expose residences to a community noise equivalent level (CNEL) of greater than 65 decibels.

- Dept. of Water and Power Granada Hills Heliport in the city of Granada Hills.
- A heliport in the Devonshire area.
- Whiteman Airport near the city of San Fernando.
- Barton Heliport in the unincorporated community of Pacoima.
- Holy Cross Medical Center Heliport in the city of San Fernando.
- Spears Heliport in the city of San Fernando.
- Merle Norman Cosmetics Heliport in the unincorporated community of Sylmar.
- Olive View Medical Center Heliport in the unincorporated community of Sylmar.
- Camp 14 Heliport in the unincorporated community of Saugus.
- Henry Mayo Newhall Memorial Hospital Heliport in the unincorporated community of Valencia.
- The Sheriff's Station Heliport in the unincorporated community of Valencia.

Sensitive Receptors
Sensitive receptors along the reconductoring corridor include the Placerita State Park and Rosedell High School. There are also 1,980 residences within 1,000 feet from the Haskell Canyon Switching Station to Rinaldi Substation. The noise levels are generally found to range between 55 dBA and 75 dBA in most communities.

Haskell Canyon Switching Station

The proposed Haskell Canyon Switching Station site would be located on a vacant site within the ANF just north of the City of Santa Clarita. There are no existing noise sources within the area. The closest noise receptors are the Veluzat Motion Picture Ranch to the east and a residential community to the south.

Barren Ridge Switching Station

The existing Barren Ridge Switching Station is located 12 miles north of the City of Mojave. Noise sources include State Route 14 and electrical transformers within the station and their associated transmission lines. State Route 14 to the east is a major transportation artery through the Mojave Desert and contributes the greatest noise levels. During peak use periods, traffic noise levels can range from 80 to 90 dB(A) at 50 feet from the shoulder. There are no sensitive receptors in close proximity to the switching station.

New 230 kV Circuit

A new 230 kV circuit from the existing Castaic Power Plant to the proposed Haskell Canyon Switching Station would be placed on existing LADWP 230 kV transmission line structures located in unincorporated areas of Los Angeles County.

Noise Sources
Within the same transmission line corridor is another LADWP 230 kV transmission line to the south. Operation of the high voltage transmission lines and electric substation equipment can create audible corona noise, but it is barely heard in fair weather conditions.

The alignment of the new 230 kV circuit would generally parallel Interstate 5. It would also cross or come in close proximity to a few local roadways with low traffic and areas of off-highway vehicle use in the ANF. Interstate 5 is a major transportation artery that can have significant localized noise levels, especially from large diesel long-haul trucks. During peak use periods, traffic noise levels can range from 80 to 90 dB(A) at 50 feet from the shoulder of the interstate. The local roadways would typically be used by local residents, delivery trucks and other vendors, and recreationalists. Noise levels along these roadways when vehicles are present would be expected to range from 50 to 70 dB(A) at 50 feet from the shoulder of the road. Dispersed recreation within the ANF occurs and may allow for off-highway vehicle (OHV) use. Noise levels of these vehicles can vary from 50 to over 80 dB(A) at a distance of 25 feet, depending upon the activity.

The Castaic Dam Heliport, an FAA-registered air facility, would be located in the unincorporated community of Castaic and within 20,000 feet of the proposed new 230 kV circuit corridor. The California Division of Aeronautics is in charge of enforcing airport noise regulations for all airports within the State of California and airports are not to expose residences to a community noise equivalent level (CNEL) of greater than 65 decibels.

Sensitive Receptors
Sensitive receptors to the addition of a new 230 kV circuit include 20 residences within 1,000 feet of the new 230 kV circuit, the Castaic Lake State Recreation Area, and camping areas within the ANF. The general noise environment of areas within and adjacent to residences would likely to be typical of rural to suburban locations, normally averaging from 30 to 50 dB(A). Outdoor average nighttime noise levels would be typically five dB(A) quieter than daytime averages.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

The Alternative 1 transmission line would traverse rural areas.

Noise Sources
Existing noise sources for the Alternative 1transmission line would include roadways and airports. The Alternative 1 transmission line would come in close proximity to State Highway 14 and Interstate 5, and cross State Highway 58. During peak use periods, traffic noise levels can range from 80 to 90 dB(A) at 50 feet from the shoulder of the roadway. The local roadways noise levels, when vehicles are present, would be expected to range from 50 to 70 dB(A) at 50 feet from the shoulder of the road. Three FAA-registered air facilities would be located within 20,000 feet of the Alternative 1 transmission line and are listed below.

- Castaic Dam Heliport in the unincorporated community of Castaic.

- Quail Lake Sky Park Airport in the unincorporated community of Gorman and the city of Lancaster in close.
- Sheriff's Wayside Heliport in the unincorporated community of Valencia, near the unincorporated community of Rosamond.

Sensitive Receptors

The Alternative 1 transmission line has the following sensitive receptors: 106 residences within 1,000 feet, the Pacific Crest Trail, Castaic Lake State Recreation Area, Neenach Elementary School and Veluzat Motion Picture Ranch. The Pacific Crest Trail is a 2,650 mile long trail that the United States Congress designated as the first scenic trail in the National Trails System. The Castaic Lake State Recreation Area is home to one of the largest State Water Project reservoirs in Southern California and allows for many different types of recreation, such as boating, fishing, picnicking, and camping. The Veluzat Motion Picture Ranch is a 750-acre ranch that operates as an active studio for films, television shows, and music videos.

The general noise environment of areas within and adjacent to residences would be typical of rural to suburban locations, normally averaging from 30 to 50 dB(A). Outdoor average nighttime noise levels would be typically five dB(A) quieter than daytime averages.

Alternative 2

The Alternative 2 transmission line would traverse rural and suburban areas.

Noise Sources

The Alternative 2 transmission line would have the following noise sources: roadways, the Drinkwater OHV Staging Area, and airports. It would come into close proximity to State Route 14 and cross State Route 58. Drinkwater Flat OHV area is a High Impact Recreational Area (HIRA) per the USFS and is open to motorcycles, ATVs, and four-wheel drive vehicles. Four FAA registered air facilities would be within 20,000 feet of the Alternative 2 transmission line and are listed below:

- Lloyd's Landing Airport in the unincorporated community of Rosamond
- Mojave Airport in unincorporated community of Mojave
- Skyotee Ranch Airport in the unincorporated community of Rosamond
- Little Buttes Antique Airfield in the city of Lancaster

Sensitive Receptors

Sensitive receptors along the Alternative 2 transmission line would include: 110 residences within 1,000 feet of the transmission line; the Pacific Crest Trail; and the Antelope Valley Poppy Reserve. The Antelope Valley California Poppy Reserve includes 1,745 acres of protected land to allow the California Poppy (California state flower) to flourish every spring and allow visitors to enjoy the trails located within.

Alternative 2a

The Alternative 2 transmission line would be located in a rural and suburban noise environment.

The transmission line for Alternative 2a would be very similar to Alternative 2. They would share 56 miles of the same alignment and would have the same roadway, OHV, and airport noise sources. The difference would be the seven-mile re-route around the unincorporated community of Green Valley that would be located along an existing fire road and create a new transmission line corridor within the ANF. There would be no existing noise sources except from the fire road, which experiences very low traffic.

Sensitive receptors would include the Antelope Valley California Poppy Reserve, the Pacific Crest Trail, and 70 residences within 1,000 feet of the transmission line (the lowest number of all the Action Alternatives).

Alternative 3

The northern portion of the Alternative 3 transmission line would traverse rural and suburban areas. The southern portion would be located near urban areas that include the cities of Lancaster, Palmdale, and Santa Clarita.

Noise Sources

Noise sources would include State Routes 14 and 58, three FAA-registered air facilities listed below, and Rowher Flats OHV area. The Rowher Flats OHV area is a HIRA that consists of 10,000 acres and is open to motorcycles, ATVs, and four-wheel drive vehicles.

- Agua Dulce Airport in the unincorporated community of Agua Dulce in close proximity to the Alternative 3 transmission line route.
- Bohunk's Airpark Airport in the city of Lancaster in close proximity to the Alternative 3 transmission line route.
- Little Buttes Antique Airfield in the city of Lancaster adjacent to the central portion of the Alternative 3 transmission line.

Sensitive Receptors

Alternative 3 would have the following sensitive receptors: the Pacific Crest Trail, three movie studios, Ritter Ranch Park, and 242 residences within 1,000 feet of the transmission line (the most residences of all the Action Alternatives). The S.O.S FilmWorks, Veluzat Motion Picture and Blue Cloud Movie Ranch are movie studios used in films, television, and music videos. Ritter Ranch Park contains over 4,000 acres perched at the eastern end of the Sierra Pelona Mountains.

3.2.3 LAND USE

Introduction

This section identifies and describes the land uses affected by implementation of the Proposed Action and Alternatives. It provides an overview of the technical methodology used in establishing baseline conditions, examines the affected environment within a defined study area and vicinity context, and presents the regulatory framework that is relevant to land use. While agricultural, recreational, and open space uses were identified, the analyses of these resources are presented separately in Section 3.2.4 (Agriculture) and Section 3.2.5 (Recreation). A discussion of Significant Ecological Areas (SEAs), Habitat Conservation Plans (HCPs), and Natural Community Conservation Plans (NCCPs) are also presented separately in Section 3.3.1 (Biological Resources).

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Land Use Technical Report, and contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Land Use Technical Report, please refer to that report for more detailed information on Proposed Action and Alternatives effects on land uses.

Overview of Methodology and Analysis Area

The objective of the land use inventory was to identify, map, describe, and document the existing, planned, and designated land uses within the land use study area (study area). This was accomplished by collecting data for land use types within a one-mile wide study corridor (0.5 mile on each side of the centerline of the transmission line) for the Proposed Action and Alternatives.

Initially, base maps were prepared at a scale of 1:12,000. Land use data collected from a number of environmental studies in the region were reviewed, refined, and updated. Agency land and resource management and planning documents were also reviewed for applicable data and land management regulations and policies. In addition, on-line database searches of the BLM LR2000 system were conducted.

Following this initial step in the inventory, key federal, State, and local land and resource management agencies were contacted to update information and to solicit further input. Contacts were established by telephone, letter, e-mail, or personal interview. Current data was compiled and mapped utilizing a geographic information system (GIS). Aerial Photography (National Agriculture Imagery Program 2005 color aerial photography and Google Earth 2009), and national, State, and local agency GIS data layers were utilized to identify and more accurately assess surface land uses and land cover types.

General and area land use designations were determined from local plans within the Proposed Action and Alternatives impact corridor. Land uses for the BLM and ANF were identified through review of the California Desert Conservation Plan, including the West Mojave Plan, and Forest Service Land Management Plan for the ANF. Field investigations were conducted to verify and supplement selected existing land uses during September 2007 and from September 2008 through May 2009.

Airports and airstrips in the vicinity of the Proposed Action and Alternatives were also identified from information provided by the Federal Aviation Administration (FAA) and review of published maps and aerial photography (National Agriculture Imagery Program 2005 color aerial photography and Google Earth 2009).

The Proposed Action and Alternatives are located in portions of southern Kern County and northern Los Angeles County (refer to Figures 3.2.3-1 and 3.2.3-2). The geography of the area is diverse, containing mountainous areas, agricultural lands, and desert areas. Land use planning, management and jurisdictional authority fall under federal, State, and local agencies, including the BLM (Ridgecrest and Palm Springs-South Coast Field Offices), USFS (Angeles National Forest), Department of Defense (DoD), California State Lands Commission, California Department of Parks and Recreation, California Department of Fish and Game, California

Department of Transportation, Kern County, Los Angeles County, City of Lancaster, City of Palmdale, City of Santa Clarita, City of Los Angeles, and City of San Fernando.

Primary existing land uses located within the southern Kern County study area and vicinity include utility and transportation rights-of-way, scattered residential development, open space, agriculture, and military uses. Scattered parcels of BLM public lands administered by the Ridgecrest Field Office are located in the area. Land use authorizations granted by the BLM allow for private entities to utilize public lands for specific purposes. BLM land use authorizations (authorized and pending) identified in the study area are presented in Table 3.2.3-1.

TABLE 3.2.3-1. AUTHORIZED AND PENDING LAND USE AUTHORIZATIONS - BLM

Serial Number	Status	Description
CACA 048820	Pending	First Solar Development Inc – ROW-Solar Dev Fac
CACA 048871	Pending	Los Angeles Dept Water & Power – ROW-Power Tran-FLPMA
CACA 049576	Pending	Power Partners Southwest LLC – ROW-Solar Dev Fac
CACA 008183	Authorized	BLM CAL SO – WDL-Stock Driveway
CACA 008184	Authorized	BLM CAL SO – Small Tract Class
CALA 0088876	Authorized	Los Angeles Dept Water & Power – ROW-Misc & Special
CALA 0119205	Authorized	Continental Telephone Co of CA - ROW-Telephone-Telegraph
CARI 000231	Authorized	Los Angeles Dept Water & Power – ROW-Water Plants
CARI 001658	Authorized	BLM CAL SO – CL-Multi Use Mgt
CACA 051723	Pending	AES Seawest Inc – ROW- Wind Proj Test
CACA 023812	Pending	Mojave Public Utility Dist – Unauth Act –ROW-Other
CACA 012452	Authorized	CA Dept Transportation – Fed Aid Highway(Sec 317)
CACA 016650	Authorized	Southern California Edison Co – ROW-Power Tran-FLPMA
CACA 020234	Authorized	Kern Cnty Of – ROW-Other-FLPMA
CACA 044611	Authorized	Alta Windpower Dev., LLC – ROW- Wind Proj Test
CACA 047096	Authorized	Cary Norman Mellott Lynn W – ROW-Other-FLPMA
CALA 0142891	Authorized	Karma Mining Co Queen Esther Mining Co Echo Mining Co – ROW-Water Plants
CARI 000231	Authorized	Los Angeles Dept Water & Power – ROW-Water Plants
CAS 0036175	Authorized	CA Dept of Transportation – Fed Aid Highway(Sec 17)

Source: BLM Land & Mineral Legacy Rehost 2000 System – Run Date: March 31, 2010

Communities within the Kern County study area include the unincorporated communities of Willow Springs and Rosamond and unincorporated community of Mojave. A number of renewable energy projects (solar and wind) are planned or have been recently approved. General Plan land use designations in this area of Kern County are predominantly Intensive and Extensive Agriculture, Resource Management, and Residential.

Existing land uses in the northern Los Angeles County study area and vicinity consist of the cities of Lancaster, Palmdale, Santa Clarita, Los Angeles, and San Fernando. These urban areas include residential, commercial, public/quasi-public, industrial, and military uses. Unincorporated communities within the region in Los Angeles County include Agua Dulce, Antelope Acres, Bouquet Canyon, Canyon Country, Castaic, Castaic Junction, Del Sur, Elizabeth Lake, Green Valley, Lake Hughes, Leona Valley, Mint Canyon, Neenach, Newhall, Quartz Hill, Saugus, Valencia, and Vasquez Rocks. Residential parcel sizes tend to become larger as the distance from incorporated areas or unincorporated urban community areas increases.

Commercial, public/quasi-public, and industrial development is primarily found in or around incorporated and unincorporated communities. Commercial uses exist near the on/off ramps of Interstate 5 (I-5) and along State highways. Commercial microwave, cellular and radio towers are generally located in and around communities, along major roadways, and on mountain peaks. Film production is found in the area and includes three movie ranches (Veluzat Motion Picture Ranch, Blue Cloud Movie Ranch, and Agua Dulce Movie Ranch – S.O.S. FilmWorks). Industrial uses include business parks and light manufacturing uses located in the unincorporated community of Castaic and along the Sierra Highway. Oil wells are located in the Placerita Canyon area.

The area has seen much growth and annexation over the last 20 years, such as the incorporation of the City of Santa Clarita and the expansion of the cities of Palmdale and Lancaster, especially along the Highway 14 corridor. The area contains numerous tracts of land planned for future development.

Primary General Plan land use designations within the northern Los Angeles County study area consist of Urban Mixed, Residential, and Agriculture. The ANF is also located in the area and existing land uses include undeveloped lands utilized for recreational, natural resource, and fire management purposes. Other uses include rural residential, and non-recreation special-uses (public and private road rights-of-way, apiaries, telephone and electric service rights-of-way, oil and gas pipeline rights-of-way, and hydroelectric power-generating facilities). Special Use Authorizations allow their use and occupancy on National Forest System (NFS) land. Management of NFS lands within the ANF is guided by the 2005 ANF Land Management Plan (LMP), adopted pursuant to planning regulations of the National Forest Management Act (NFMA).

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FIGURE 3.2.3-1. LAND USE—NORTHERN PORTION OF PROJECT AREA

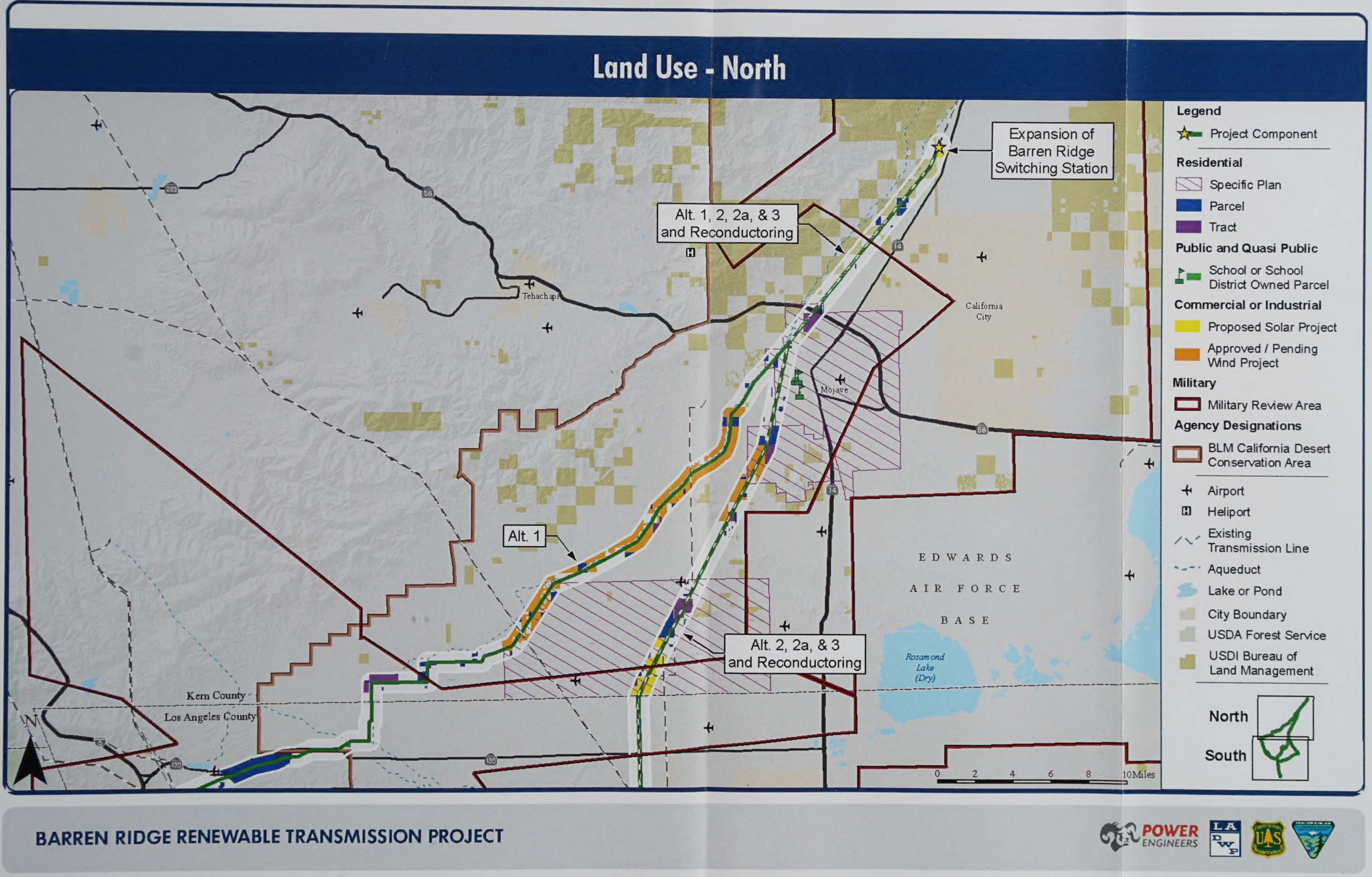
Land Use - North
Expansion of Barren Ridge Switching Station
Alt. 1, 2, 2a, & 3 and Reconductoring
Alt. 1
Alt. 2, 2a, & 3 and Reconductoring
Tehachapi
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
58
223
14
138
5
N
0 2 4 6 8 10 Miles
Legend
Project Component
Residential
Specific Plan
Parcel
Tract
Public and Quasi Public
School or School District Owned Parcel
Commercial or Industrial
Proposed Solar Project
Approved / Pending Wind Project
Military
Military Review Area
Agency Designations
BLM California Desert Conservation Area
Airport
Heliport
Existing Transmission Line
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

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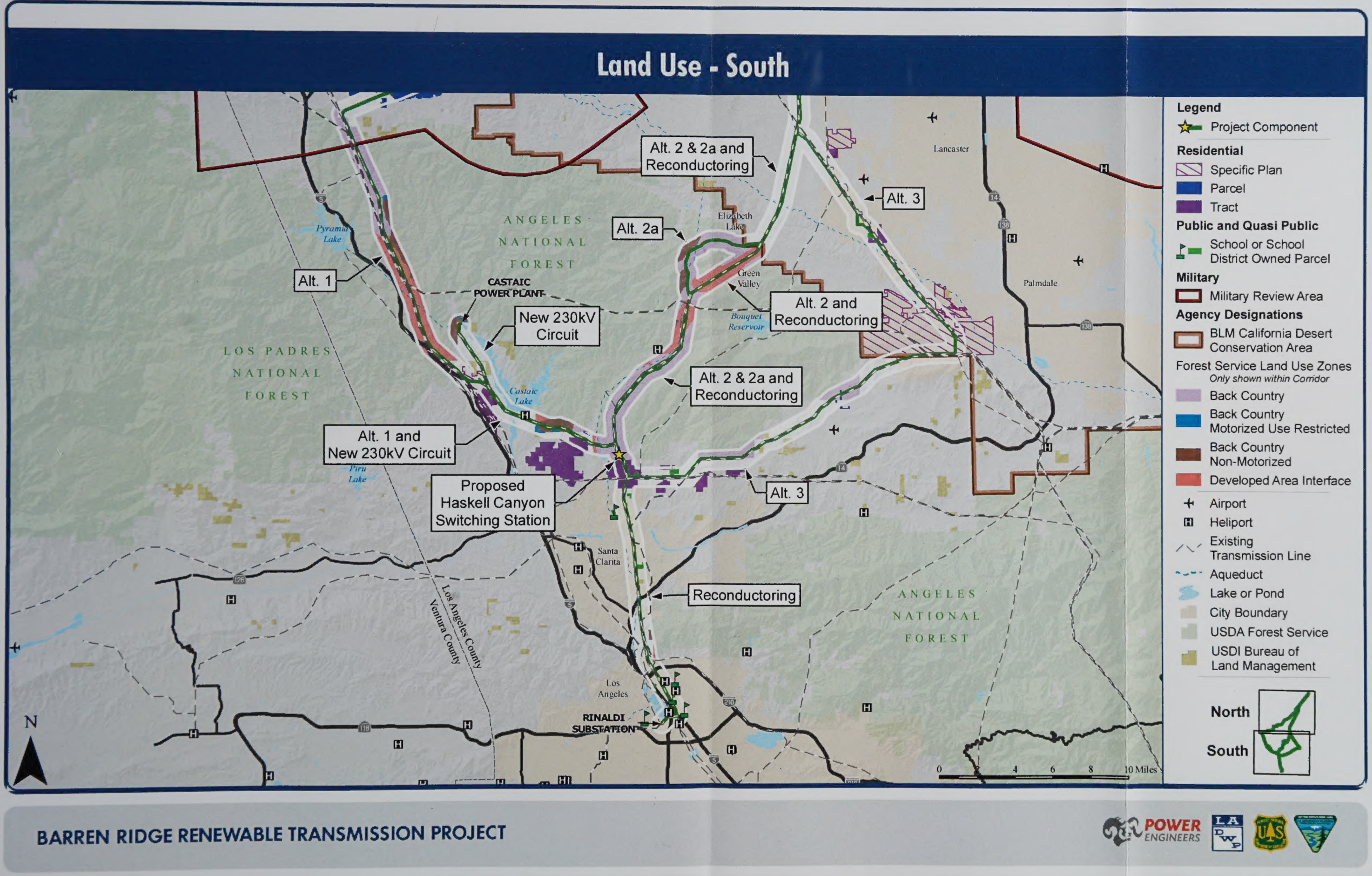
FIGURE 3.2.3-2. LAND USE—SOUTHERN PORTION OF PROJECT AREA


Land Use - South
Alt. 2 & 2a and Reconductoring
Alt. 3
Alt. 2a
Alt. 1
ANGELES NATIONAL FOREST
CASTAIC POWER PLANT
New 230kV Circuit
Alt. 2 and Reconductoring
LOS PADRES NATIONAL FOREST
Alt. 2 & 2a and Reconductoring
Alt. 1 and New 230kV Circuit
Proposed Haskell Canyon Switching Station
Alt. 3
Reconductoring
ANGELES NATIONAL FOREST
Pyramid Lake
Castaic Lake
Piru Lake
Elizabeth Lake
Green Valley
Bouquet Reservoir
Lancaster
Palmdale
Santa Clarita
Los Angeles
Los Angeles County
Ventura County
RINALDI SUBSTATION
N
0 2 4 6 8 10 Miles
Legend
Project Component
Residential
Specific Plan
Parcel
Tract
Public and Quasi Public
School or School District Owned Parcel
Military
Military Review Area
Agency Designations
BLM California Desert Conservation Area
Forest Service Land Use Zones
Only shown within Corridor
Back Country
Back Country Motorized Use Restricted
Back Country Non-Motorized
Developed Area Interface
Airport
Heliport
Existing Transmission Line
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

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Eight land Use zone designations have been established in the ANF LMP to identify suitable development in the ANF; Developed Area Interface (DAI), Back Country (BC), Back Country Motorized Use Restricted (BCMUR), Back Country Non-Motorized (BCNM), Critical Biological (CB), Existing Wilderness (EW), Recommended Wilderness (RW), and Experimental Forest (EF). Table 3.2.3-2 provides a description of these land use zones.

TABLE 3.2.3-2. ANGELES NATIONAL FOREST LAND USE ZONES

Land Use Zone	Land Use Zone Description
Developed Area Interface (DAI)	The DAI zone includes areas adjacent to communities or concentrated developed areas with more scattered or isolated community infrastructure. The level of human use and infrastructure is typically higher than in other zones. This zone may have a broad range of higher intensity uses; however, the management intent is to limit development to a slow increase of carefully designed facilities to help direct use into the most suitable areas and improving existing facilities before developing new ones.
Back Country (BC)	The BC zone includes areas that are generally undeveloped with few roads. The level of human use and infrastructure is low. Most of the ANF's remote recreational and administrative facilities are found in this zone. Although the BC zone generally allows for a broad range of uses, its management intent is to retain its natural character and limit the level and type of development. Additionally, it is anticipated that this zone will be managed for no increase, or a very low level of increase, in its road system.
Back Country Motorized Use Restricted (BCMUR)	The BCMUR zone includes areas of the ANF that are generally undeveloped with few roads. Few facilities are found in this zone, but some may occur in remote locations. The level of human use and infrastructure is low to moderate. Although this zone allows a range of low intensity land uses, its management intent is to retain its natural character and limit the level and type of development. Some roads may be constructed and maintained, but the intent is to manage the zone for no increase, or a very low level of increase, in its road system.
Back Country Non-Motorized (BCNM)	The BCNM zone generally includes areas of the ANF that are undeveloped with few, if any roads. Developed facilities supporting dispersed recreation activities are minimal and generally limited to trails and signage. The level of human use and infrastructure is low. While a range of non-motorized public uses are generally allowed, the management intent of this zone is to retain its undeveloped character and limit development to a low level of increase. Facility construction (except trails) is generally not allowed, but may occur in remote locations where roaded access is not needed for maintenance.
Critical Biological (CB)	The CB zone includes the most important areas in the ANF for the protection of species-at-risk. Facilities are minimal to discourage human use. The level of human use and infrastructure is low to moderate. The management intent of this zone is to retain its natural character and habitat characteristics and limit the level of human development. Activities and modifications to existing infrastructure are allowed if they are beneficial or neutral to the species for which the zone is primarily managed. Human uses are more restricted in this zone than in BCNM zone in order to protect species needs, but are not excluded. Low impact uses, such as hiking, mountain biking and hunting are generally allowed. Road density will not be increased.
Existing Wilderness (EW)	The EW zone includes Congressionally designated wildernesses. Only uses consistent with all applicable wilderness legislation and the zone's primitive character are allowed. Road access is limited. The management intent of this zone is focused on public use and enjoyment while preserving its wilderness character and natural conditions.
Recommended Wilderness (RW)	The RW zone includes lands which are recommended to Congress for wilderness designation. These lands are managed in the same manner as EW zone. If RW lands are not designated as wilderness by Congress, they are zoned BCNM until modified by a subsequent amendment to the Forest Service Land Management Plan. No inventoried roads are found in the RW zone.
Experimental Forest (EF)	The EF zone provides for research and demonstration areas. The EF zone is generally closed to the public except by permit. Within the ANF, only the San Dimas Experimental Forest is zoned EF.

Within each land use zone of the ANF are special designation overlays that identify suitable land uses. Special designation overlays include Wild and Scenic Rivers, Inventoried Roadless Areas, Research Natural Areas, Special Interest Areas, and Other Designations (communication sites, utility corridors, transportation corridors, recreation residence tracts, shooting areas, and sediment disposal sites).

The ANF is also divided into eleven geographical units of different landscape character, known as "Places." Places reflect the overall impression of landscape attributes, physical appearance, and cultural context of a landscape.

The USFS has created an overall theme, setting, desired condition, and management program emphasis for each Place. Table 3.2.3-3 summarizes the desired conditions for the Places traversed by the Proposed Action and Alternatives.

TABLE 3.2.3-3. DESIRED CONDITIONS FOR ANGELES NATIONAL FOREST PLACES TRAVERSED BY THE PROPOSED ACTION AND ALTERNATIVES

Place	Desired Conditions for Place
Liebre-Sawmill Place	The desired condition for the Liebre-Sawmill Place is the natural undeveloped appearance of the landscape, with dramatic desert panoramas and open space areas. The management program for the Liebre-Sawmill Place emphasizes the preservation of forest health and aims to maintain the area's sense of remoteness and minimal use.
Santa Clara Canyon	The desired condition for the Santa Clara Canyon Place is the natural appearance and pastoral landscape, with dramatic canyon panoramas, rugged mountain backviews, and oak woodlands. The management program emphasizes a focus on community protection, recreation use, and urban and forest infrastructure that is sustainable, sympathetic to the natural setting and integrity, and has nominal effects to wildlife habitat as well as heritage resources.
Soledad Front Country	The desired condition for the Soledad Front Country Place is to maintain its function as a scenic backdrop, with dramatic canyons and rugged mountains. The management program emphasizes fire protection for surrounding communities, and the accommodation of recreational use. Management is also focused on protecting open space areas in this place from encroachment by adjacent development. The Pacific Crest Trail traverses the entire width of the Soledad Front Country Place.
I-5 Corridor	The desired condition for the I-5 Corridor Place is a scenic transportation gateway that provides canyon and rugged mountain views to visitors traveling along I-5. The management program emphasizes sustainable urban and forest infrastructure that preserves the integrity of the natural setting and minimizes the effects to species of concern, as well as heritage resources.

Other land uses common to both the southern Kern County and northern Los Angeles County study areas and vicinity include:

Military Facilities

Department of Defense (DoD) military facilities identified in the region include China Lake Naval Air Weapons Station and Edwards Air Force Base (AFB). The China Lake Naval Air Weapons Station and Edwards AFB are located in an area referred to as "the R-2508 complex," which is used for the advancement of weapons systems technology and tactical training.

The R-2508 Complex provides the largest single area of Special Use Airspace over land in the United States, covering a land area of 20,000 square miles in eastern Kern, San Bernardino, Los Angeles, Ventura, Tulare, and Inyo Counties. The complex consists of restricted areas (R-2508, R-2502N, R-2502E, R-2505, R-2506, R-2515, and R-2524), Military Operations Areas (MOA), Air Traffic Control Assigned Airspace (ATCAA) areas, Controlled Firing Areas (CFAs), and other special airspace, such as the CORDS Road, the Precision Impact Range Area, the Black Mountain Supersonic Corridor, the North Hypersonic Corridor, the South Hypersonic Corridor, and the Airfield Approach and Departure Corridors.

In addition to the China Lake Naval Air Weapons Station and Edwards AFB, other military installations use this air space, including the Fort Irwin Military Reservation near the city of Barstow and Air Force Plant 42 in the city of Palmdale.

Linear Facilities

Linear facilities in the area include electrical transmission lines owned and operated by LADWP and Southern California Edison (SCE) as well as numerous sub-transmission and distribution lines (both aerial lines and buried cable), petroleum pipelines, and other utility features. Other utility features consist of long distance and local telephone aerial wires, buried copper and fiber optic cables, aerial and buried cable television lines, gas lines, and domestic water lines. The California Aqueduct, part of the State Water Project, traverses the area mostly underground and in a primarily north-south direction. Highways and roads consist of Interstate highways, U.S. highways, State highways, county and other local roads, as well as USFS and BLM roads.

Air Facilities

Air facilities (public and private airports) are located near and in the vicinity of the Proposed Action and Alternatives. Other air facilities may exist as part of agricultural and/or movie production operations. Twenty FAA-registered air facilities within 20,000 feet of the Proposed Action and Alternatives were identified (see Appendix F, Table F-16 of this Final EIS/EIR). In addition, aircraft operations associated with BLM's National Aviation Office and the USFS' Office of Fire and Aviation Management provide aircraft support for wildfire suppression and resource management on public lands.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

The addition of a 230 kV circuit between the proposed Haskell Canyon Switching Station and Castaic Power Plant would not require a new or additional right-of-way (ROW). This Project component would traverse land uses similar to Alternative 1 (between mileposts 74.8 and 82.7) and Alternative 2 (between mileposts 60.3 and 60.8). The new 230 kV circuit would be located in an ANF-designated utility corridor (Castaic to Haskell).

Reconductoring of BR-RIN Transmission Line

Reconductoring of the BR-RIN transmission line would cross or run adjacent to land uses similar to Alternative 2 as described below.

New Haskell Canyon Switching Station

The proposed new Haskell Canyon Switching Station site is located in an unincorporated portion of Los Angeles County, northerly of the city of Santa Clarita, in the Bouquet Canyon area of the Santa Clarita Valley. The site would be situated on LADWP land generally west of Pettinger Canyon and north of Dry Canyon Reservoir near the southern border of the ANF. The subject parcel is relatively flat, with gently sloping hills situated immediately to the north, south, east, and west. Land to the north and west is vacant and undeveloped with the exception of LADWP transmission lines traversing horizontally and diagonally across the property. Paralleling the LADWP transmission lines is an unpaved maintenance access road. USFS roads are also present, allowing access to and egress from the site. In addition, two Veluzat Movie Ranch lease-hold properties are situated on private lands within the limits of the ANF, generally east and west of the proposed switching station site. A third Veluzat Movie Ranch (Blue Cloud) is located to the southeast.

Recent growth in the Santa Clarita Valley has caused new residential nodes to expand northward towards the southern boundary of the ANF, and the nearest subdivision is located approximately 0.5 mile southwest of the proposed switching station site.

The proposed new switching station would be located on OS (Open Space)–NF (National Forest) land as designated in the Santa Clarita Valley Area Plan, a component of the Los Angeles General Plan. Open spaces are considered to be lands under public and private ownership that are primarily managed for recreation purposes, the protection of natural resources, and/or for purposes of safeguarding public health and safety.

Development proposals would be applicable to hillside management and flood protection performance standards and criteria. Proposed private and public development projects within the National Forest boundaries would be reviewed by both the Regional Planning Commission and the USFS for compliance with applicable land use and resource management plans.

The proposed new switching station site is also located within the A-2-2 (Heavy Agriculture-Two Acre Minimum Required Lot Area) Zoning District. Utility substations are permitted subject to a Conditional Use Permit.

Expansion of Barren Ridge Switching Station

The Barren Ridge Switching Station expansion area would be located adjacent to the existing switching station on vacant land owned by LADWP. Existing land uses within 0.5 mile of the Barren Ridge Switching Station include vacant and electrical power facilities. BLM public lands are situated west and north of the expansion area. Staging areas would also be located on vacant land near the switching station. Existing access roads would be used for construction and maintenance activities.

The Barren Ridge Switching Station expansion area would be located on land designated Resource Management in the Kern County General Plan: Land Use, Open Space and Conservation Element. These areas may be characterized by physical constraints, may constitute an important watershed recharge area or wildlife habitat, or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.

The expansion area would also be located within the Platted Lands (PL) and Residential Suburban (RS) Zoning Districts. Utility substations in these districts are permitted subject to a conditional use permit.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

The proposed route would traverse BLM public land designated as a utility corridor (Corridor A) and Section 368 energy corridor (multi-modal corridor 23-106). The Alternative 1 transmission line would also fall within proximity to public aviation-related uses for the Mojave Airport as well as Special Use Airspace for the R-2508 Complex. This area and the area further to the southwest are generally undeveloped and planned for future renewable energy development (see Appendix F, Table F-6 of this Final EIS/EIR). Land uses within and adjacent to the transmission line include the Los Angeles Aqueduct, a railroad, and scattered residential housing units.

The Alternative 1 transmission line would continue southwest parallel to the Los Angeles Aqueduct to Lancaster Road. The route would then proceed west until it reaches the ANF's Old Ridge Route designated utility corridor. At this point, the transmission line would turn southeast, where it would parallel several existing high-voltage transmission lines within portions of two designated utility corridors (Old Ridge Route and I-5). Land uses within these corridors include I-5, the Old Ridge Route, California State Water Project facilities, electric transmission lines, oil and gas pipelines, and fiber optic systems. Residential uses traversed by the Alternative 1 transmission line would include Paradise Ranch Mobile Home Park, and the unincorporated communities of Castaic, Neenach, and Holiday Valley Estates. A private airport, Quail Lake Sky Park, is also located east of Quail Lake.

The Alternative 1 transmission line would traverse the following ANF Places: 1-5 Corridor and Santa Clara Canyons. The transmission line would traverse mainly BC and DAI land use zones, with shorter crossings of BCMUR and BCNM zones. The Alternative 1 transmission line is entirely within a designated utility corridor across the ANF.

The Alternative 1 transmission line would terminate at the proposed Haskell Canyon Switching Station. A film production area near this terminus includes the existing 750-acre Veluzat Motion Picture Ranch. The ranch operates as an active studio, and has been used for a number of feature films, television shows, and music videos. The natural scenery is also advertised as an integral element of the sets, and includes desert, pine forests, an open area mesa, meadows, and a lake. No film sets would be directly crossed by this Alternative.

Land use plan designations crossed by the Alternative 1 transmission line are found in Table 3.2.3-4 and listed by milepost in Appendix F, Table F-2 of this Final EIS/EIR.

TABLE 3.2.3-4. LAND USE PLAN DESIGNATIONS CROSSED BY THE ALTERNATIVE 1 230 KV TRANSMISSION LINE

Land Jurisdiction	Applicable Land Use Plan	Designation within Impact Corridor
BLM	California Desert Conservation Area, West Mojave Plan	Multiple Use Class Limited
California Department of Fish and Game		Property Undesignated
Kern County	Kern County General Plan	Extensive Agriculture (Min. 20 Acre Parcel Size) Maximum 4 Unites/Net Acre Mineral 10 Gross Acres/Unit Mineral and Petroleum (Min. 5 Acre Parcel Size) Minimum 20 Gross Acres/Unit Resource Management (Min. 20 acres parcel size) Resource Agriculture (Min. 20 Acre Parcel Size) Other Facilities Specific Plan Required
Los Angeles County	Antelope Valley Area Plan	Non-Urban 1 (0.5 du/ac) Open Space Water Body
Los Angeles County	Santa Clarita Valley Area Plan	National Forest Hillside Management Specific Plan Public Service Facilities Open Space Non-Urban 1 (0.I5 du/ac) Floodway/floodplain
State of California	N/A	
USFS	Angeles National Forest Land Management Plan Land Use Zones*	Back Country Developed Area Interface Back Country Motorized Use Restricted Back Country Non-Motorized

Existing and planned residential and non-residential development projects would be traversed by the Alternative 1 transmission line. It would traverse four specific plan areas (Mojave, Willow Springs, Centennial, and Northlake). The Centennial Specific Plan envisions a 23,000-home master-planned community with civic squares, parks, shops, fire stations, schools, and other services. The Northlake Specific Plan, approved by the County of Los Angeles in 1992, provides for the development of a master-planned, mixed-use community of 1,330 acres in the unincorporated community of Castaic. Development is currently proposed on 670 acres of a Phase One area depicted on Vesting Tentative Tract Map (VTTM) No. 51852.

There are 106 residences located within 1,000 feet of the Alternative 1 transmission line centerline.

Existing and planned residential and non-residential development projects traversed by the Alternative 1 transmission line are presented below (Table 3.2.3-5) and listed by milepost in Appendix F, Table F-6 of this Final EIS/EIR.

TABLE 3.2.3-5. EXISTING AND PLANNED DEVELOPMENT PROJECTS TRAVERSED BY THE ALTERNATIVE 1 230 KV TRANSMISSION LINE

Project	Type	Status
Kern County		
Alta-Oak Creek Mojave Wind Energy Project	public facilities and utilities	approved/recorded
Avalon Wind Project	public facilities and utilities	pending/under review
Enxco MET Tower	public facilities and utilities	approved/recorded
Mojave Specific Plan	residential	approved/recorded
Pacific Wind Project	public facilities and utilities	pending/under review
Ridge Rider Solar Park Project	public facilities and utilities	pending/under review
PdV Wind Energy Project	public facilities and utilities	approved/recorded
Willow Springs Specific Plan	residential	approved/recorded
Windstar Wind Project	public facilities and utilities	pending/under review
PM 10207	residential	approved/recorded
PM 1757	residential	approved/recorded
PM 2107	residential	approved/recorded
PM 2385	residential	approved/recorded
PM 2490	residential	approved/recorded
PM 2958	residential	approved/recorded
PM 3600	residential	approved/recorded
PM 3763	residential	approved/recorded
PM 4389	residential	approved/recorded
PM 467	residential	approved/recorded
PM 5064	residential	approved/recorded
PM 6145	residential	approved/recorded
PM 9106	residential	approved/recorded
PM 9755	residential	approved/recorded
PM 985	residential	approved/recorded
TR Aqueduct 1	residential	approved/recorded
TR Aqueduct 2	residential	approved/recorded
TR Aqueduct 3	residential	approved/recorded
TR2494	residential	approved/recorded
TR2507	residential	approved/recorded
TR2508	residential	approved/recorded
Los Angeles County		
Centennial Specific Plan	multi-use	pending/under review
PM060021	multi-use	pending/under review
PM060022	multi-use	pending/under review
Northlake Specific Plan	residential	pending/under review
TR51852	residential	pending/under review
TR51644	residential	approved/recorded

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

The proposed route would traverse BLM public land designated as a utility corridor (Corridor A) and Section 368 energy corridor (multi-modal corridor 23-106).

Land that would be traversed or within 0.5 mile of the Alternative 2 transmission line in unincorporated Kern County consists of predominantly open, undeveloped patches of desert and desert flora. Land improvements (development) within 0.5 mile include scattered rural residential, recreation (county trails), and agricultural uses. The Alternative 2 transmission line would also fall within proximity to public aviation-related uses for the Mojave Airport and a private airstrip (Lloyd's Landing), as well as Special Use Airspace for the R-2508 Complex. Sailplane activities are also conducted daily from the Mojave Airport. In addition, the Antelope Valley Water Bank (AVWB) would be traversed by the transmission line. The AVWB encompasses an 18-square mile area totaling 13,440 acres, of which 1,482 acres would be dedicated for spreading basins and the rest of the property would be undisturbed except for the construction of recovery wells and associated pipelines. Development and operation responsibilities for the AVWB are through the Semitropic-Rosamond Water Bank Authority.

Land in the study area and vicinity in northern Los Angeles County includes open space, existing rural low-density unincorporated communities (i.e., Antelope Acres, Lake Hughes, Elizabeth Lake, and Leona Valley), the California Aqueduct, and some recreation-related uses (i.e., trails). Horse ranches, non-irrigated croplands, and improved pasture lands are also located along San Francisquito Canyon and Bouquet Canyon Roads. The Antelope Valley California Poppy Reserve is located 0.5 mile west of Alternative 2, near Lancaster Road.

The Alternative 2 transmission line would continue south through the ANF Santa Clara/Mojave Rivers Ranger District. The route through this area is designated as a utility corridor (Oregon-Sylmar) and 368 energy corridor (electric-only corridor 264-265). The Alternative 2 transmission line would traverse the following ANF Places: Liebre-Sawmill and Santa Clara Canyons. ANF Land use zones crossed by the Alternative 2 transmission line are found in Table 3.2.3-6 and listed by milepost in Appendix F, Table F-3 of this Final EIS/EIR.

The Alternative 2 transmission line would terminate at the proposed Haskell Canyon Switching Station. A film production area near this terminus includes the existing 750-acre Veluzat Motion Picture Ranch. The ranch operates as an active studio, and has been used for a number of feature films, television shows, and music videos. The natural scenery is also advertised as an integral element of the sets, and includes desert, pine forests, an open area mesa, meadows, and a lake. No film sets would be directly crossed by the Alternative transmission line.

TABLE 3.2.3-6. LAND USE PLAN DESIGNATIONS CROSSED BY THE ALTERNATIVE 2 230 KV TRANSMISSION LINE

Land Jurisdiction	Applicable Land Use Plan	Designation within Impact Corridor
BLM	California Desert Conservation Area, West Mojave Plan	Multiple Use Class Limited
Kern County	Kern County General Plan	Extensive Agriculture (Min. 20 Acre Parcel Size) Greenbelt General Commercial Intensive Agriculture (Min. 20 Acre Parcel Size) Low Density Residential Maximum 1 Unit/Net Acre Maximum 1 Unit/Net Acre/Comprehensive Plan Area Maximum 4 Units/Net Acre Maximum 10 Units/Net Acre Maximum 10 Units/Net Acre/Comprehensive Plan Area Maximum 16 Units/Net Acre Maximum 29 Units/Net Acre Mineral 2.5 Gross Acres/Unit Mineral and Petroleum (Min. 5 Acre Parcel Size) Other Facilities Resource Agriculture (Min. 20 Acre Parcel Size) Resource Management (Min. 20 Acre Parcel Size) Specific Plan Required
Los Angeles County	Antelope Valley Area Plan	Non-Urban 1 (0.5 du/ac) Non-Urban 2 (1.0 du/ac) Open Space National Forest Water Body
Los Angeles County	Santa Clarita Valley Area Plan	National Forest
USFS	Angeles National Forest Land Management Plan	Back County Developed Area Interface

Existing and planned residential and non-residential development projects would be traversed by the Alternative 2 transmission line. The transmission line would traverse three specific plan areas in southwest Kern County (Mojave, Soledad Mountain-Elephant Butte, and Willow Springs). Of note is the presence of the Willow Springs Specific Plan (WSSP) adopted in 1992. The 16-by-6-mile, 50,560-acre plan area is six miles west of the unincorporated community of Rosamond and is bounded on the south by Avenue "A" (Los Angeles/Kern County Line), on the east by the alignment of 50th Street West, and on the north by a township line which is the projection of Dawn Road. The westerly boundary is a section line (190th Street West) and a northeast trending desert trail (State Road 5381 that generally parallels the Los Angeles Aqueduct).

The unincorporated community of Willow Springs is open, primarily undeveloped, and consists of agriculture. Onions, sugar beets, carrots, and alfalfa are predominantly grown commercially in the region. Present structural development consists of a number of residences scattered throughout the area along with limited commercial services. Other land uses include a motor racetrack, poultry farms, private airstrips, and ore mining.

The existing land division pattern reflects the existing zoning classification, established in 1970, of E (2 1/2) RS (formerly A-1 and A-2), which allowed areas with a combining zone to allow large animals. Most land divisions in the unincorporated community of Willow Springs occurred prior to the 1973 Kern County General Plan and 1973 Parcel Map Ordinance. Overall, there are 12 tracts and 28 records of survey tracts in the plan area. Since 1973, 136 parcel maps have been recorded.

The WSSP is anticipated to be a long-term plan with development occurring well into the next century. Ultimate build-out of the plan would be determined by market demand, availability of financing, and provision of infrastructure. Future market conditions may either accelerate or delay implementation of the plan.

Existing and planned residential and non-residential development projects traversed by the Alternative 2 transmission line are There are 156 residences located within 1,000 feet of the transmission line.

Existing and planned residential and non-residential development projects traversed by the Alternative 2 transmission line are presented below (Table 3.2.3-7) and listed by milepost in Appendix F, Table F-7 of this Final EIS/EIR.

TABLE 3.2.3-7. EXISTING AND PLANNED DEVELOPMENT PROJECTS TRAVERSED BY THE ALTERNATIVE 2 230 KV TRANSMISSION LINE

Project	Type	Status
Kern County		
Alta-Oak Creek Mojave Wind Energy Project	public facilities and utilities	approved/recorded
Antelope Valley Water Bank Project	public facilities and utilities	pending/under review
Avalon Wind Project	public facilities and utilities	pending/under review
Mojave Specific Plan	residential	approved/recorded
Ridge Rider Solar Park Project	public facilities and utilities	pending/under review
Soledad Mountain-Elephant Butte Specific Plan	residential	approved/recorded
Willow Springs Specific Plan	residential	approved/recorded
Rosamond Solar Array Project	public facilities and utilities	pending/under review
PM 11055	residential	approved/recorded
PM 2385	residential	approved/recorded
PM 2957	residential	approved/recorded
PM 2958	residential	approved/recorded
PM 6145	residential	approved/recorded
PM 7901	residential	approved/recorded
PM 9213	residential	approved/recorded
PM 9755	residential	approved/recorded
TR 3263	residential	approved/recorded
TR 3474	residential	approved/recorded
TR Aqueduct 1	residential	approved/recorded
TR Aqueduct 2	residential	approved/recorded
TR Aqueduct 3	residential	approved/recorded
TR T3253	residential	approved/recorded

Alternative 2a

The Alternative 2a transmission line is 63 miles long and would follow the same route as the transmission line in the Proposed Action, except that a 6.6 mile portion would be located to the north and around the unincorporated community of Green Valley (Green Valley Re-route). The Green Valley Re-route would occur within the jurisdictional boundaries of the ANF (Santa Clara/Mojave Rivers Ranger District) and Los Angeles County.

The Green Valley Re-route would exit the 1,000-foot ANF designated utility corridor and rejoin with the existing utility corridor southwest of the unincorporated community Green Valley. The Alternative 2a transmission line would traverse the following ANF Places: Liebre-Sawmill and Santa Clara Canyons.

The Green Valley Re-route would be located on lands having an ANF zoning of Back Country and Back Country Non-Motorized. The Bypass would also have a Los Angeles County General Plan (Antelope Valley Areawide General Plan) land use designation of Non-Urban 2 (1.0 du/ac) – N2. Land use plan designations crossed by Alternative 2a are found in Table 3.2.3-8 and listed by milepost in Appendix F, Table F-4 of this Final EIS/EIR.

TABLE 3.2.3-8. LAND USE PLAN DESIGNATIONS CROSSED BY THE ALTERNATIVE 2A 230 KV TRANSMISSION LINE

Land Jurisdiction	Land Use Plan	Designation within Impact Corridor
BLM	California Desert Conservation Area, West Mojave Plan	Multiple Use Class Limited
Kern County	Kern County General Plan	Extensive Agriculture (Min. 20 Acre Parcel Size) Greenbelt General Commercial Intensive Agriculture (Min. 20 Acre Parcel Size) Low Density Residential Maximum 1 Unit/Net Acre Maximum 1 Unit/Net Acre/Comprehensive Plan Area Maximum 4 Units/Net Acre Maximum 10 Units/Net Acre Maximum 10 Units/Net Acre/Comprehensive Plan Area Maximum 16 Units/Net Acre Maximum 29 Units/Net Acre Mineral 2.5 Gross Acres/Unit Mineral and Petroleum (Min. 5 Acre Parcel Size) Other Facilities Resource Agriculture (Min. 20 Acre Parcel Size) Resource Management (Min. 20 Acre Parcel Size) Specific Plan Required
Los Angeles County	Antelope Valley Area Plan	Non-Urban 1 (0.5 du/ac) Non-Urban 2 (1.0 du/ac) Open Space National Forest Water Body
Los Angeles County	Santa Clarita Valley Area Plan	National Forest

Land Jurisdiction	Land Use Plan	Designation within Impact Corridor
USFS	Angels National Forest Land Management Plan	Back Country Back County Non-Motorized Developed Area Interface

Existing and planned residential/non-residential development projects traversed by the Alternative 2a transmission line would be the same as Alternative 2 (see Appendix F, Table F-7). No additional existing or planned residential/non-residential development projects would be traversed by the Green Valley Re-route.

There are 70 residences located within 1,000 feet of the Alternative 2a transmission line centerline.

Alternative 3

The proposed route would traverse BLM public land designated as a utility corridor (Corridor A) and Section 368 energy corridor (multi-modal corridor 23-106).

Land that would be traversed or within 0.5 mile of the Alternative 3 transmission line in unincorporated Kern County consists of predominantly open, undeveloped patches of desert and desert flora. Land improvements (development) within 0.5 mile include scattered rural residential, recreation (county trails), and agricultural uses. The Alternative 3 transmission line would also fall within proximity to public aviation-related uses for the Mojave Airport and a private airstrip (Lloyd's Landing), as well as Special Use Airspace for the R-2508 Complex. Sailplane activities are also conducted daily from the Mojave Airport. In addition, the AVWB would be traversed by the transmission line. The AVWB encompasses an 18-square mile area totaling 13,440 acres, of which 1,482 acres would be dedicated for spreading basins and the rest of the property would be undisturbed except for the construction of recovery wells and associated pipelines. Development and operation responsibilities for the AVWB are through the Semitropic-Rosamond Water Bank Authority.

The Alternative 3 transmission line would proceed south for six miles where it would then turn to the southeast towards California State Route 138. Lands that would be traversed by this portion of the route include the unincorporated community of Quartz Hill and the cities of Lancaster and Palmdale. The unincorporated community of Quartz Hill is the largest of the unincorporated communities in the Antelope Valley and is bounded by the city of Lancaster. Located south of the city of Lancaster is the city of Palmdale. The developed portions of the city of Palmdale occupy an area generally bounded by the California Aqueduct on the south and 70th Street West on the west. The northern extent of urban development in the city of Palmdale follows an irregular path from Avenue M in the northwest portion, around existing rural residential areas in the north, and south along Avenue P.

The Alternative 3 transmission line would also traverse two partially constructed large specific plan development areas (Ritter Ranch and City Ranch [Anaverde]), located in the southwestern portion of the city of Palmdale. The route would pass through portions of both specific plans.

The Alternative 3 transmission line would then turn in a west-southwesterly direction towards the Vasquez Canyon Road area. This portion of the route would traverse the unincorporated community of Agua Dulce and two separate areas of the ANF. Alternative 3 would traverse and/or be located adjacent to numerous residences and the S.O.S. FilmWorks (a 174 acre filming site). No active film sets would be directly crossed by the transmission line. Within the ANF, the route would be located in a designated utility corridor (Victorville to Rinaldi). The Alternative 3 transmission line would traverse the following ANF Places: Soledad Front Country.

The Alternative 3 transmission line would then generally proceed in a westerly direction towards the proposed Haskell Canyon Switching Station site where two movie ranches (Veluzat and Blue Cloud) are located in the vicinity.

Land use plan designations crossed by the Alternative 3 transmission line are found in Table 3.2.3-9 and listed by milepost in Appendix F, Table F-5 of this Final EIS/EIR.

TABLE 3.2.3-9. LAND USE PLAN DESIGNATIONS CROSSED BY THE ALTERNATIVE 3 230 KV TRANSMISSION LINE

Land Jurisdiction	Land Use Plan	Designation within Impact Corridor
BLM	California Desert Conservation Area, West Mojave Plan	Multiple Use Class Limited
Kern County	Kern County General Plan	Extensive Agriculture (Min. 20 Acre Parcel Size) Greenbelt General Commercial Intensive Agriculture (Min. 20 Acre Parcel Size) Low Density Residential Maximum 1 Unit/Net Acre Maximum 1 Unit/Net Acre/Comprehensive Plan Area Maximum 4 Units/Net Acre Maximum 10 Units/Net Acre Maximum 10 Units/Net Acre/Comprehensive Plan Area Maximum 16 Units/Net Acre Maximum 29 Units/Net Acre Mineral 2.5 Gross Acres/Unit Mineral and Petroleum (Min. 5 Acre Parcel Size) Other Facilities Resource Agriculture (Min. 20 Acre Parcel Size) Resource Management (Min. 20 Acre Parcel Size) Specific Plan Required
Lancaster	Lancaster General Plan	Non-Urban Residential (.4-2.0 DU/AC) Urban Residential (2.1 – 6.5 DU/AC)
Los Angeles County	Antelope Valley Area Plan	Non-Urban 1 (0.5 du/ac)
Los Angeles County	Santa Clarita Valley Area Plan	Commercial Hillside Management Non Urban 1 (0.5 du/ac) Non-Urban 2 (0.5 to 1.0 du/ac) Open Space (Bureau of Land Management) National Forest Public Service Facilities Floodway/Floodplain

Land Jurisdiction	Land Use Plan	Designation within Impact Corridor
Palmdale	Palmdale General Plan, City Ranch Specific Plan, Ritter Ranch Specific Plan	Aqueduct Low Density Residential Single Family Residential Mineral Resource Extraction Public Facility
USFS	Angeles National Forest Land Management Plan	Back Country

Existing and planned residential and non-residential development projects would be traversed by the Alternative 3 transmission line. It would traverse four specific plan areas (Mojave, Soledad Mountain-Elephant Butte Specific Plan, Willow Springs, Ritter, and City Ranch). Development of the 10,625 acre Ritter Ranch has been through phases. Phase I construction includes approximately 800 housing units, two proposed commercial centers, three parks, open space, and one elementary school. The northern boundary of the Ritter Ranch Specific Plan is delineated by the Amargosa Creek drainage and Elizabeth Lake Road. Anaverde is a large residential development located east of and adjacent to Ritter Ranch. The master planned community has approximately 5,200 housing units and occupies 1,985 acres. Fifty percent of the area is designated residential.

Existing and planned residential and non-residential development projects traversed by the Alternative 3 transmission line are presented below (Table 3.2.3-10) and listed by milepost in Appendix F, Table F-8 of this Final EIS/EIR.

TABLE 3.2.3-10. EXISTING AND PLANNED DEVELOPMENT PROJECTS TRAVERSED BY THE ALTERNATIVE 3 230 KV TRANSMISSION LINE

Project	Type	Status
Kern County		
Alta-Oak Creek Mojave Wind Energy Project	public facilities and utilities	approved/recorded
Avalon Wind Project	public facilities and utilities	pending/under review
Mojave Specific Plan	residential	approved/recorded
Mojave Specific Plan	residential	approved/recorded
Mojave Specific Plan	residential	approved/recorded
Ridge Rider Solar Park Project	public facilities and utilities	pending/under review
Rosamond Solar Array Project	public facilities and utilities	pending/under review
Soledad Mountain-Elephant Butte Specific Plan	residential	approved/recorded
Willow Springs Specific Plan	residential	approved/recorded
PM 11055	residential	approved/recorded
PM 198	residential	approved/recorded
PM 2385	residential	approved/recorded
PM 2957	residential	approved/recorded
PM 2958	residential	approved/recorded
PM 6145	residential	approved/recorded
PM 7901	residential	approved/recorded
PM 8941	residential	approved/recorded
PM 9213	residential	approved/recorded
PM 9755	residential	approved/recorded
TR 3263	residential	approved/recorded
TR 3474	residential	approved/recorded

Project	Type	Status
TR Aqueduct 1	residential	approved/recorded
TR Aqueduct 2	residential	approved/recorded
TR Aqueduct 3	residential	approved/recorded
TR T3253	residential	approved/recorded
City of Lancaster		
VTTM 066062 (includes school site property (Westside Union School District)	residential; institutional	approved/recorded
City of Palmdale		
Ritter Ranch Specific Plan	residential	approved/recorded
City Ranch Specific Plan	residential	approved/recorded

Approximately 242 residences would be located within 1,000 feet of the Alternative 3 transmission line centerline.

3.2.4 AGRICULTURE

Introduction

This section describes the agricultural resources that would be affected by the Proposed Project and Alternatives. Specifically, agricultural resources are defined to include: (1) applicable Important Farmland categories (Prime, Unique, and Farmland of Statewide Importance) designated by the California Department of Conservation (DOC); (2) Williamson Act lands under contract or designated as Agricultural Preserves; and (3) Active Agricultural Operations.

Active Agricultural Operations may or may not be designated DOC Farmland or Williamson Act lands. A conservative approach was used wherein areas identified as including active or potentially active agriculture during aerial photography/field review were assumed to encompass Active Agricultural Operations. Lands not in active cultivation but exhibiting signs of recent agricultural-related activities (i.e., plowing, weed removal, and/or agricultural infrastructure maintenance) were mapped as Active Agricultural Operations. Areas that seemingly supported previous agricultural uses but appeared to be inactive and unmaintained, as evidenced by substantial weed growth and/or infrastructure and facility disrepair, were not designated or mapped as Active Agricultural Operations. Active Agricultural Operations included cropland, vineyards, apiaries, and orchards.

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Land Use Technical Report, and contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Land Use Technical Report, please refer to that report for more detailed information on Proposed Action and Alternatives effects on agricultural resources.

The following discussion addresses the existing environmental conditions in the affected area. In addition, existing laws and regulations relevant to agricultural resources are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Action and Alternatives.

Forestry Resources affected by the Proposed Action and Alternatives are addressed in Section 3.3.1, Biological Resources.

Overview of Methodology and Analysis Area

In order to identify resources and lands designated for agriculture, data were obtained from the DOC and applicable local sources. Specifically, these data include mapped locations of DOC Important Farmland as well as Williamson Act contract lands and Agricultural Preserves. In addition, information regarding active agriculture was obtained from aerial photographs, local landowners, and field reconnaissance (September 2007 and September 2008 through May 2009). For purposes of this analysis, lands within a one-mile study corridor (i.e., 0.5 mile on each side of the assumed centerline) for the Proposed Action and Alternatives were mapped in order to identify the types of agricultural resources affected (disturbed or made unavailable for agriculture). Finally, data regarding agricultural-related operations (e.g., crop types and irrigation methods) were obtained from local farm bureaus, published literature, and previous environmental studies. Data was compiled and mapped utilizing a geographic information system (GIS). Please see Figures 3.2.4-1 and 3.2.4-2.

FIGURE 3.2.4-1. AGRICULTURAL RESOURCES IN THE NORTHERN PORTION OF THE PROJECT AREA

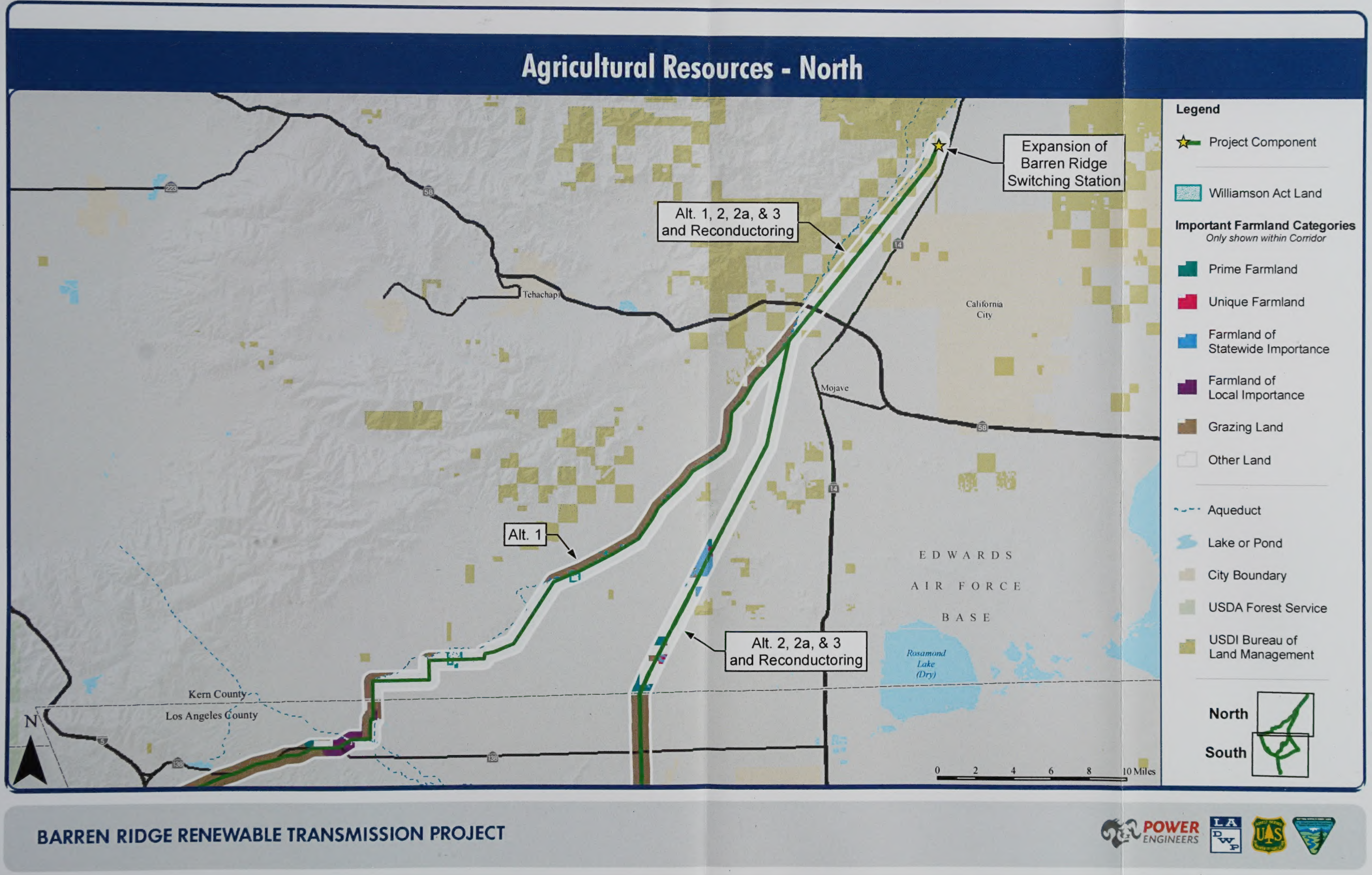
Agricultural Resources - North
Expansion of Barren Ridge Switching Station
Alt. 1, 2, 2a, & 3 and Reconductoring
Alt. 1
Alt. 2, 2a, & 3 and Reconductoring
Tehachapi
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
N
223
58
14
138
5
0 2 4 6 8 10 Miles
Legend
Project Component
Williamson Act Land
Important Farmland Categories
Only shown within Corridor
Prime Farmland
Unique Farmland
Farmland of Statewide Importance
Farmland of Local Importance
Grazing Land
Other Land
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
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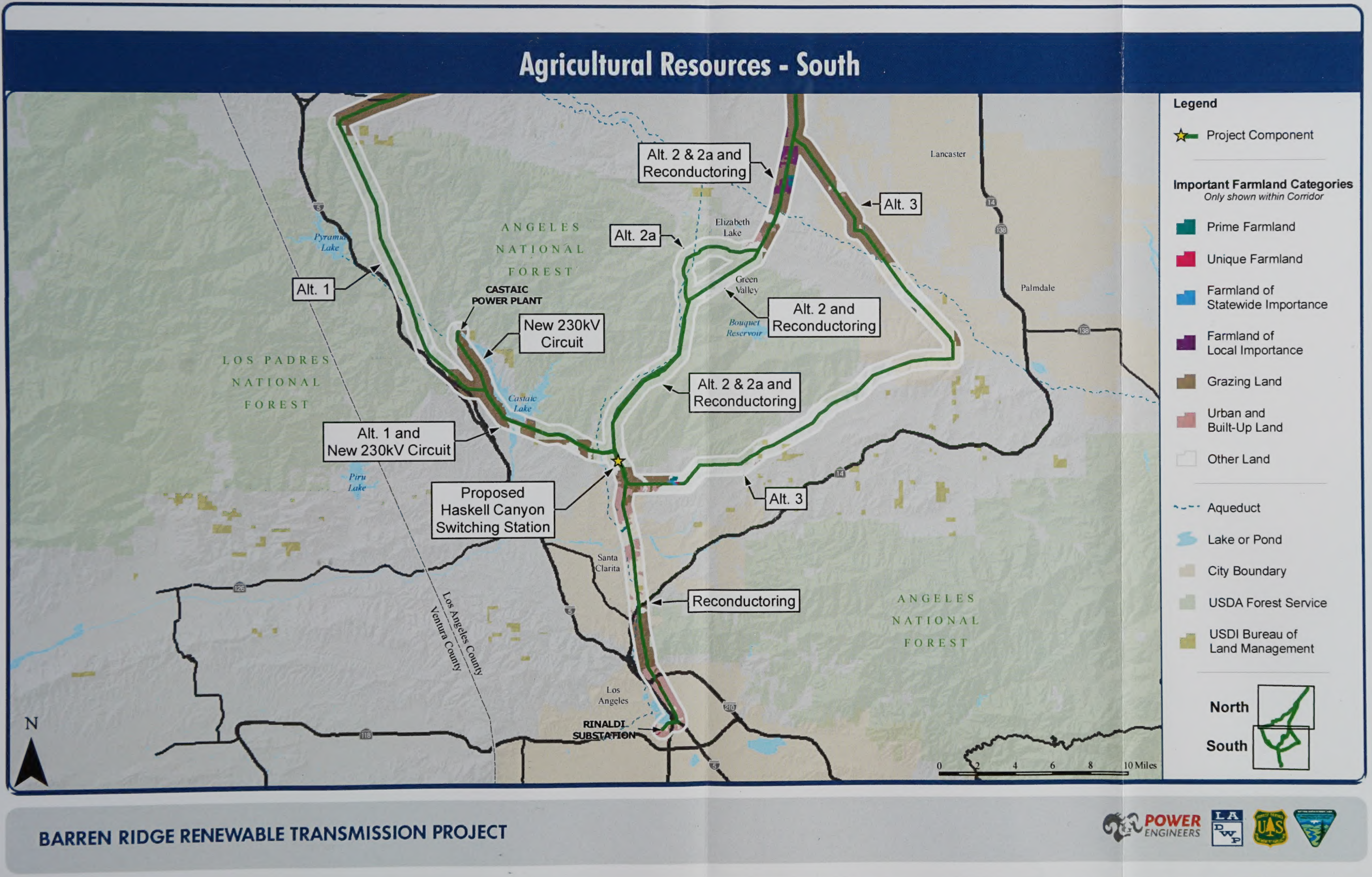
FIGURE 3.2.4-2. AGRICULTURAL RESOURCES IN THE SOUTHERN PORTION OF THE PROJECT AREA


Agricultural Resources - South
Alt. 2 & 2a and Reconductoring
Alt. 3
Lancaster
Alt. 2a
Elizabeth Lake
ANGELES NATIONAL FOREST
Pyramid Lake
Alt. 1
CASTAIC POWER PLANT
New 230kV Circuit
Green Valley
Alt. 2 and Reconductoring
Bouquet Reservoir
Palmdale
LOS PADRES NATIONAL FOREST
Castaic Lake
Alt. 2 & 2a and Reconductoring
Alt. 1 and New 230kV Circuit
Piru Lake
Proposed Haskell Canyon Switching Station
Alt. 3
Santa Clarita
Reconductoring
ANGELES NATIONAL FOREST
Los Angeles County
Ventura County
Los Angeles
RINALDI SUBSTATION
N
0 2 4 6 8 10 Miles
Legend
Project Component
Important Farmland Categories
Only shown within Corridor
Prime Farmland
Unique Farmland
Farmland of Statewide Importance
Farmland of Local Importance
Grazing Land
Urban and Built-Up Land
Other Land
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
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In order to identify California's agricultural land resources, the California DOC established the Farmland Mapping and Monitoring Program (FMMP) which applies the Natural Resources Conservation Service's (NRCS) soil classifications. Agricultural data collected by the NRCS and DOC is compiled by county. Consequently, for the purposes of this analysis, agricultural resources are analyzed by county.

The regional setting for the Proposed Action and Alternatives include parts of Kern County, the ANF, and Los Angeles County (incorporated and unincorporated). The FMMP important farmland data for Los Angeles and Kern Counties includes a 10-acre minimum mapping unit, which indicates that units of land smaller than 10 acres are incorporated into the surrounding map classifications (DOC 2004a). Important farmland is classified as the following: Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Farmland of Local Importance, Grazing Land, and agricultural land under Williamson Act Contract. See the Regulatory Setting Section for a description of these important farmland classifications. Additionally, while the ANF was not mapped under the FMMP, portions of the ANF are used for tree plantations. Plantations in Bouquet Canyon, Leona Divide, Lake Elizabeth, Canyon (along Lake Hughes Road), and Sawmill Mountain were established starting in the 1950s through to the late 1970s.

Kern and Los Angeles counties have a combined total of 3,017,772 acres of agricultural land within their jurisdictions, with the majority of this total in Kern County. Table 3.2.4-1 indicates the total acreage of agricultural land in Los Angeles and Kern Counties along with the acreage of important farmland in each jurisdiction. As shown in Table 3.2.4-1, Kern County contains 939,221 acres of Farmland, while Los Angeles County contains 42,007 acres of Farmland (DOC 2008).

TABLE 3.2.4-1. OVERVIEW OF IMPORTANT FARMLAND* AND WILLIAMSON ACT LAND IN LOS ANGELES AND KERN, COUNTIES (ACRES)**

County	Prime Farmland	Unique Farmland	Farmland of Statewide Importance	Farmland of Local Importance	Grazing Land	Total Agricultural Land	Williamson Act Contract Land
Kern	626,217	96,656	216,348	0	1,807,069	2,746,290	1,548,079
Los Angeles	32,408	1,178	1,228	7,193	229,475	271,482	0

DOC 2008*, 2007**

Alfalfa and grain hay, as well as onions, carrots, potatoes, radishes, and other root vegetables, are predominantly grown commercially in the region. Irrigation of croplands utilizes flood, pivot, wheel and hand line methods. Dryland farming is minimal. Horse ranches and improved pasture lands are also located along San Francisquito Canyon and Bouquet Canyon Road. Active orchards (fruit and nut) can be found along Bouquet Canyon Road and in other areas.

Livestock grazing occurs on BLM public lands (Hansen Common Grazing Allotment) managed by the Ridgecrest Field Office as well as on certain private lands. The 230 kV transmission line in the Proposed Action and Alternatives all traverse the grazing allotment between mileposts 0.2-2.2, 2.4-3.5, 4.0-4.7, 5.3-6.0, and 6.9-7.3. Table 3.2.4-2 presents information for this grazing allotment. Cattle were observed grazing east of Quail Lake along Alternative 1 transmission line (south of California State Route 138).

TABLE 3.2.4-2. GRAZING ALLOTMENT INFORMATION

Name	Acres		Active AUMs	Range Type[3]	Livestock	Season of Use[4]	Multiple Use Class (M, I & C)[5]	AMP
	P.L.[1]	Total[2]						
Hansen Common	34,848	72,102	354	E/P	Cattle & Sheep	12/1-9/30	M	Yes

[1] Acres of public land in the grazing allotment.

[2] The acres of private, State, BLM, and other ownerships that comprise the area of the grazing allotment.

[3] Allotments with ephemeral and perennial (E/P) forage have a mixture of both range (forage) types.

[4] The period livestock typically graze forage on the allotment. Grazing use on some allotments is authorized to occur all year long. The grazing period of use does not apply (NA) to ephemeral allotments because grazing use occurs when forage is available.

[5] Multiple Use Classes as designated by BLM. M = Moderate, I = Intensive, C = Controlled.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

The addition of a 230 kV circuit between the Haskell Canyon Switching Station and Castaic Power Plant would not affect agricultural resources.

Reconductoring of BR-RIN Transmission Line

Reconductoring of the BR-RIN transmission line would cross or run adjacent to agricultural resources similar to Alternative 2 as described below.

New Haskell Canyon Switching Station

Construction of the proposed Haskell Canyon Switching Station would not affect agricultural resources.

Expansion of Barren Ridge Switching Station

Expansion of the Barren Ridge Switching Station would not affect agricultural resources.

New 230 kV Double-Circuit Transmission Line

Alternative 1

Table 3.2.4-3 shows the categories of agricultural resources crossed by the Alternative 1 transmission line along with the total distance each category is traversed. Agricultural resources traversed by milepost are presented in Appendix F, Table F-9 of this Final EIS/EIR. The Alternative 1 transmission line would not cross an ANF plantation.

TABLE 3.2.4-3. AGRICULTURAL RESOURCES TRAVERSED BY THE ALTERNATIVE 1 230 KV TRANSMISSION LINE

Total Farmland of Local Importance	2.8 miles
Total Grazing Lands	31.2 miles
Total Cropland	2.8 miles

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Table 3.2.4-4 shows the categories of agricultural resources crossed by the Alternative 2 transmission line along with the total distance each category is traversed. Agricultural resources traversed by milepost are presented in Appendix F, Table F-10 of this Final EIS/EIR. The Alternative 2 transmission line would not cross an ANF plantation.

TABLE 3.2.4-4. AGRICULTURAL RESOURCES TRAVERSED BY THE ALTERNATIVE 2 230 KV TRANSMISSION LINE

Total Prime Farmland	1.2 miles
Total Unique Farmland	0.7 mile
Total Farmland of Statewide Importance	2.6 miles
Total Farmland of Local Importance	2.2 miles
Total Grazing Lands	11.1 miles
Total Cropland	4.7 miles

Alternative 2a

Agricultural resources crossed by the Alternative 2a transmission line are the same as Alternative 2 (see Appendix F of this Final EIS/EIR). The Alternative 2a transmission line would not cross an ANF plantation.

Alternative 3

Table 3.2.4-5 shows the categories of agricultural resources crossed by the Alternative 3 transmission line along with the total distance each category is traversed. Agricultural resources traversed by milepost are presented in Appendix F, Table F-11 of this Final EIS/EIR. The Alternative 3 transmission line would not cross an ANF plantation.

TABLE 3.2.4-5. AGRICULTURAL RESOURCES TRAVERSED BY THE ALTERNATIVE 3 230 KV TRANSMISSION LINE

Total Prime Farmland	1.9 miles
Total Unique Farmland	0.7 mile
Total Farmland of Statewide Importance	3.2 miles
Total Farmland of Local Importance	0.0 miles
Total Grazing Lands	18.7 miles
Total Cropland	4.3 miles

3.2.5 RECREATION

Introduction

This section describes the recreational resources which may be affected by the Proposed Action and Alternatives. A recreation area is any site or facility that is used for recreational activities, including but not limited to a national, state, county or city park or trail; preserve; open space; campground; or a private recreational site such as a golf course. This section provides an overview of the technical methodology used in establishing baseline conditions, examines the affected environment within a defined study area and vicinity context, and presents the regulatory framework (relevant existing laws and regulations). In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Action and Alternatives. Information related to Significant Ecological Areas (SEAs), Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) is presented separately in Section 3.3.1 (Biological Resources).

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Land Use Technical Report, contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Land Use Technical Report, please refer to that report for more detailed information on Proposed Action and Alternatives effects on recreation.

Overview of Methodology and Analysis Area

The objective of the recreation inventory was to identify, map, describe, and document the recreation areas within the Proposed Action and Alternatives study area. This was accomplished by collecting data for recreation within a one mile wide study corridor (0.5 mile on each side of the centerline of the transmission line) and region, if susceptible to disturbances (e.g., noise, traffic, dust).

Existing and planned data and maps from a variety of sources were collected and included in the inventory, as appropriate. Agency land and resource management and planning documents were also reviewed for applicable data.

Following this initial step in the inventory, key federal, State, and local land and resource management agencies were contacted to update information and to solicit further input. Contacts were established by telephone, letter, e-mail, or personal interview. Current data was compiled and mapped utilizing a geographic information system (GIS). National Agriculture Imagery Program 2005 color aerial photography, Google Earth, and federal, State, and local agency GIS data layers were utilized to identify and more accurately assess recreation resources. Field investigations were conducted to verify and supplement these existing resources during September 2007 and between September 2008 and May 2009.

The study area and region contain a number of recreational resources owned and/or managed by federal, State, local, and/or private entities (refer to Figures 3.2.5-1 and 3.2.5-2).

FIGURE 3.2.5-1. **RECREATION—NORTHERN PORTION OF THE PROJECT AREA**

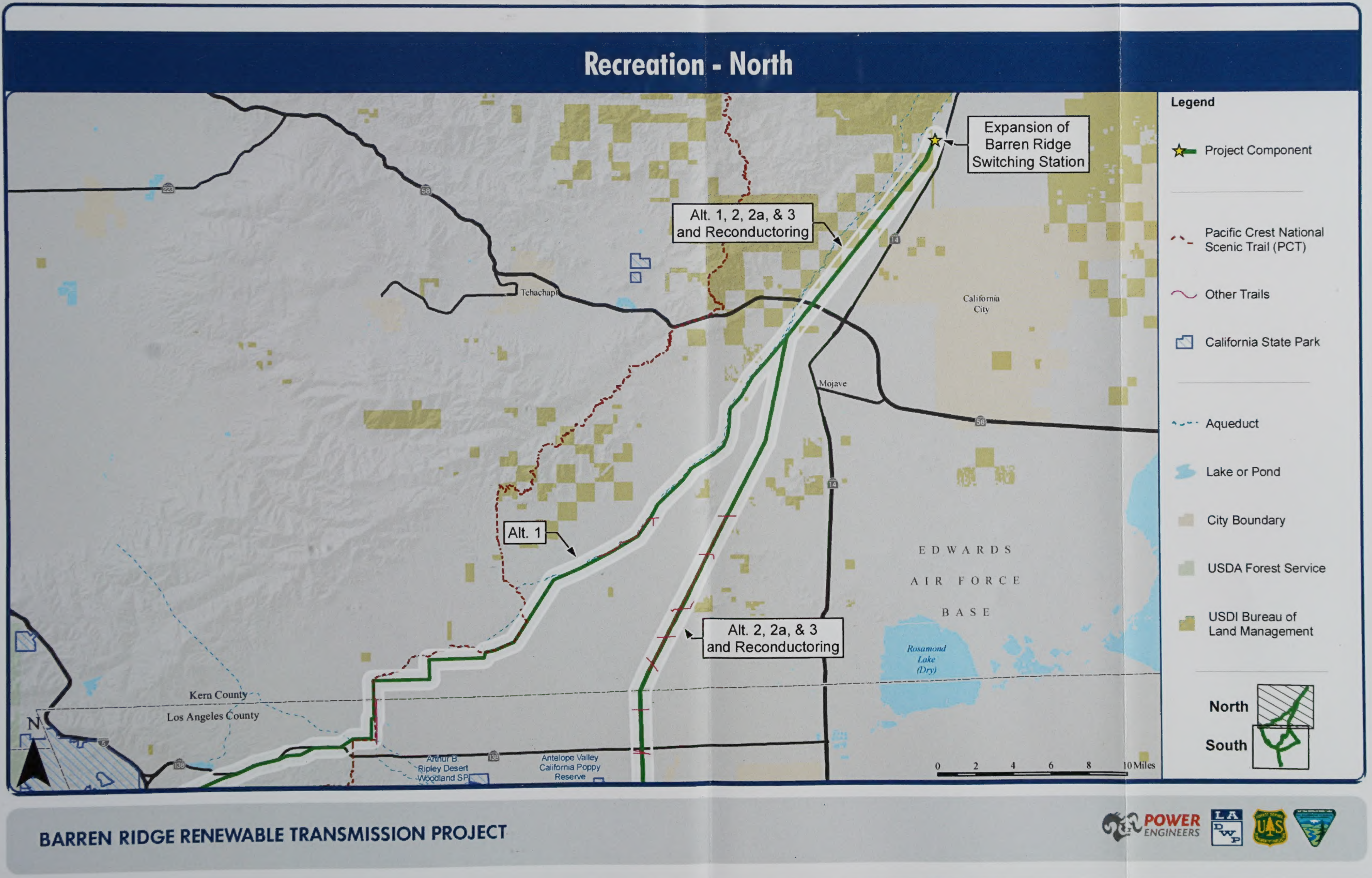
Recreation - North
Expansion of Barren Ridge Switching Station
Alt. 1, 2, 2a, & 3 and Reconductoring
Alt. 1
Alt. 2, 2a, & 3 and Reconductoring
Tehachapi
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Kern County
Los Angeles County
Arthur B. Ripley Desert Woodland SP
Antelope Valley California Poppy Reserve
58
14
138
N
0 2 4 6 8 10 Miles
Legend
Project Component
Pacific Crest National Scenic Trail (PCT)
Other Trails
California State Park
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
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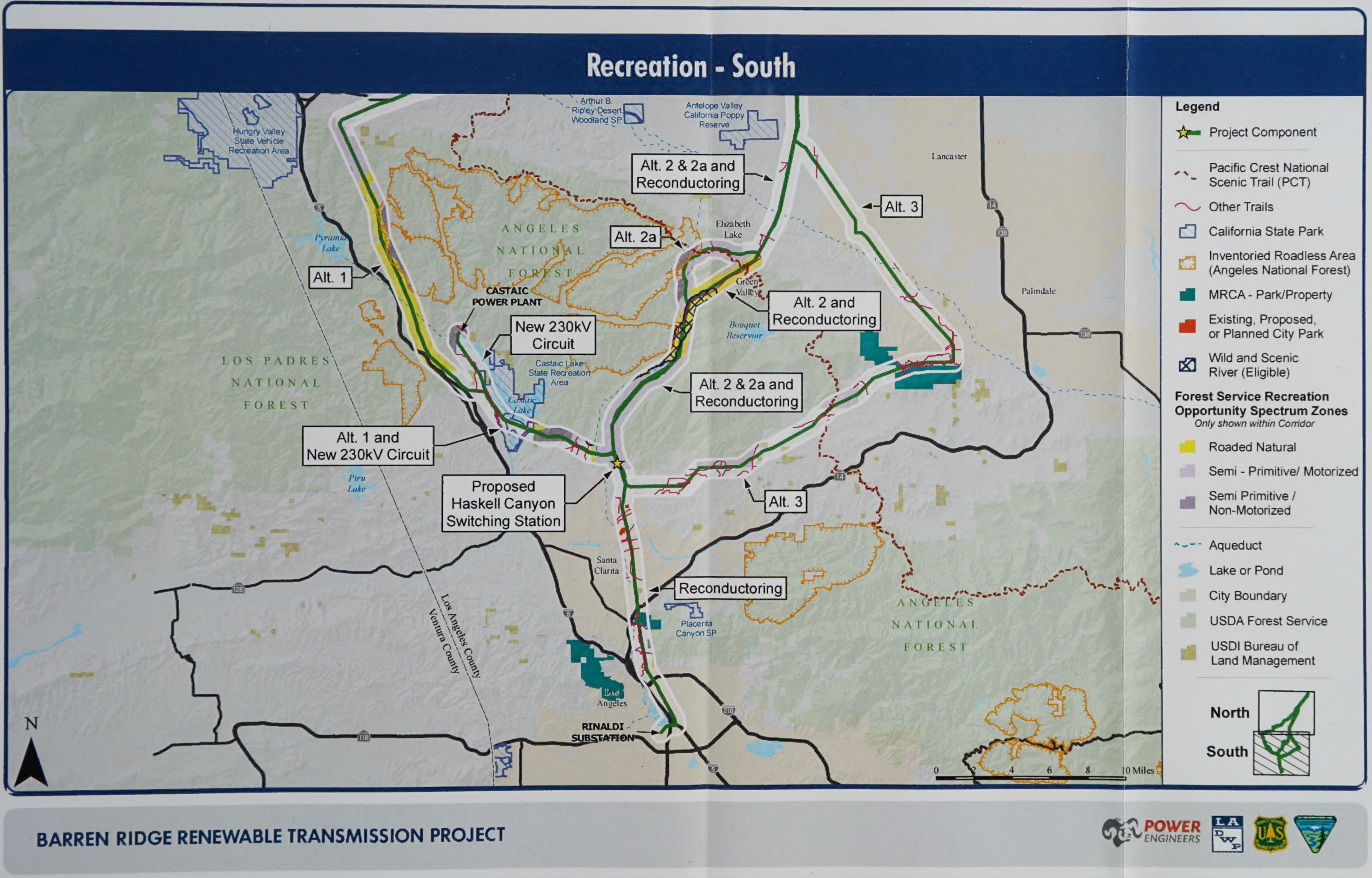
FIGURE 3.2.5-2. RECREATION—SOUTHERN PORTION OF THE PROJECT AREA


Recreation - South
Hungry Valley State Vehicle Recreation Area
Arthur B. Ripley Desert Woodland SP
Antelope Valley California Poppy Reserve
Alt. 2 & 2a and Reconductoring
Lancaster
Alt. 3
Pyramid Lake
ANGELES NATIONAL FOREST
Elizabeth Lake
Alt. 2a
Alt. 1
CASTAIC POWER PLANT
Green Valley
New 230kV Circuit
Alt. 2 and Reconductoring
Bouquet Reservoir
Palmdale
LOS PADRES NATIONAL FOREST
Castaic Lake State Recreation Area
Castaic Lake
Alt. 2 & 2a and Reconductoring
Alt. 1 and New 230kV Circuit
Piru Lake
Proposed Haskell Canyon Switching Station
Alt. 3
Santa Clarita
Reconductoring
Placerita Canyon SP
Los Angeles County
Ventura County
ANGELES NATIONAL FOREST
Los Angeles
RINALDI SUBSTATION
N
0 2 4 6 8 10 Miles
Legend
Project Component
Pacific Crest National Scenic Trail (PCT)
Other Trails
California State Park
Inventoried Roadless Area (Angeles National Forest)
MRCA - Park/Property
Existing, Proposed, or Planned City Park
Wild and Scenic River (Eligible)
Forest Service Recreation Opportunity Spectrum Zones
Only shown within Corridor
Roaded Natural
Semi - Primitive/ Motorized
Semi Primitive / Non-Motorized
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
USDI Bureau of Land Management
North
South
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Federal

BLM

The BLM (Ridgecrest Field Office) administers public land in the northern portion of the study area. The majority of this land is found in a checkerboard pattern and surrounded by private land holdings.

Recreation Management Areas (RMAs) are BLM's primary means of managing recreational use of the public lands. Public land falls within either a Special RMA (SRMA) or Extensive RMA (ERMA). The study area includes portions of two SRMAs (Southern Sierra and Mojave SRMA) which consist of 212,000 and 64,500 acres, respectively. SRMAs are areas that require a recreation investment, where more intensive recreation management is needed, and where recreation is a principal management objective. Recreational activities in the study area and vicinity typically consist of casual and dispersed uses including off-highway vehicle (OHV) use, driving for pleasure, photography, rock hounding, limited hunting, (subject to California Department of Fish and Game regulations), and primitive camping. The BLM does not have visitation statistics specific to the study area. Total estimated visitation (visits and visitor days) between October 1, 2007 and September 30, 2008 for the Southern Sierra SRMA, however, was 211,286 and 448,119, respectively. The Mojave SRMA had total estimated visits of 37,389 and visitor days of 56,550 during the same time period.

Virtually all recreational activities on BLM lands depend on availability of access to recreational areas. Motorized vehicle access, or at least the degree of access, into an area affects the desirability of that area depending upon the nature of the recreational activity. Presently, motorized-vehicle access on BLM lands within the study area occurs on "designated routes of travel" in accordance with the Multiple-Use Class L. In Multiple-Use Class L, only those routes of travel that are specifically "approved" may be used by motor vehicles.

According to the West Mojave Route Designation Program, existing BLM routes within the study area are designated as "open" and are identified as follows: MK0022, MK0025, MK0029, MK0040, MK0045, MK0048, MK0049, MK0050, MK0051, MK0052, MK0054, MK0081, MK0082, MK0105, MK0106, and MK0108. These routes currently provide for motorized-vehicle access to recreation activities (including OHV use) and other uses such as utility corridors, livestock operations, mineral extraction sites, and private lands.

No BLM ACECs (Area of Environmental Concern) or Herd Areas/Herd Management Areas were identified in the study area.

USFS (Angeles National Forest)

The Angeles National Forest (ANF) is located adjacent to the Los Angeles metropolitan area and is within a two-hour drive for more than ten million people. The ANF comprises more than 70% of the open space available for outdoor recreation in Los Angeles County. Visitor use from the early- to mid-1980s on the ANF was reported at 5.5 million recreation visitor days (RVDs), where a single RVD equals twelve visit hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons. In 1992, the USFS reported that the ANF was the second-highest ranked national forest (out of 141) in the nation for intensity of use at 0.071 acre per RVD.

The largest single use of the ANF is characterized as day use. That is persons entering the ANF for a recreation visit that does not include an overnight stay. Recreation activity groups include anglers, boaters, equestrians, hikers, OHV users, picnickers, sightseers, water players and persons participating in special events. The ANF is a year-round destination.

The ANF is divided into three separate ranger districts based upon natural watershed boundaries: the Santa Clara/Mojave Rivers Ranger District, the Los Angeles River Ranger District, and the San Gabriel River Ranger District. The Proposed Action and Alternatives are located within the Santa Clara/Mojave Rivers Ranger District with recreational uses primarily accessed from Bouquet Canyon Road, Spunky Canyon Road, and San Francisquito Canyon Road.

Recreational resources and opportunities on NFS lands in the ANF are managed by the USFS as either Developed Recreation or Dispersed Recreation. Developed Recreation includes resources that are regularly maintained by the USFS such as OHV routes, trails (hiking, biking, and equestrian use), campgrounds, picnic areas, information centers, and other, similar facilities. Dispersed Recreation generally includes undeveloped open space areas that are used for recreational purposes but are not regularly maintained by the USFS.

Recreation Opportunity Spectrum

In addition to the Forest Land Use Zones and Places described above in Section 3.2.3, USFS management direction for recreational opportunities in the ANF is further specified by Recreation Opportunity Spectrum (ROS) classes. The 2005 ANF Land Management Plan (LMP) uses ROS classes to plan for future management of recreation areas and resources in the ANF. The ROS is a framework for defining classes of outdoor recreation environments, activities and experience opportunities within the Forest. The opportunities are arranged along a continuum or spectrum divided into five classes which define recreation opportunities within various areas of the forest. Table 3.2.5-1 provides a description of these ROS classes.

TABLE 3.2.5-1. USDA FOREST SERVICE RECREATION OPPORTUNITY SPECTRUM (2005)

ROS Objective Setting	Characterization
Primitive	Characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free of evidence of human-induced restrictions and controls. Motorized use within the area is not permitted. There are no developed facilities.
Semi-Primitive Non-Motorized	Characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction among users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized recreation is not permitted, but local roads used for other resource management activities may be present on a limited basis. Use of such roads is restricted to minimize impacts on recreation experience opportunities. A minimum of developed facilities (if any) are provided.
Semi-Primitive Motorized	Characterized by a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present but would be subtle. Motorized use of local primitive or collector roads with predominantly natural surfaces and trails suitable for motorbikes is permitted. Developed facilities are present but are more rustic in nature.

ROS Objective Setting	Characterization
Roaded Natural	Characterized by predominantly natural-appearing environments with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction among users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities, which are present and well–defined.
Rural	Characterized by a substantially developed environment and a background with natural-appearing elements. Moderate to high social encounters and interaction between users is typical. Renewable resource modification and utilization practices are used to enhance specific recreation activities. Sights and sounds of humans are predominant on the site and roads and motorized use is extensive. Facilities are more highly developed for user comfort with ample parking.

Source: USFS 2005

Different types of recreational resources, activities, and opportunities are made available or restricted by USFS management practices, depending upon the applicable ROS class. Accordingly, any activity on NFS lands that conflicts with the applicable ROS class for that area may affect corresponding recreational opportunities that are intended to be available under the applicable ROS designation. With the exception of the "Primitive" ROS Class, the Proposed Action and Alternatives would traverse all of the ROS classes described above.

High-Impact Recreation Areas

In accordance with the Federal Lands Recreation Enhancement Act (REA) of 2004, the USFS has designated areas on NFS lands that experience concentrated use or higher rates of visitation as High Impact Recreation Areas (HIRAs). The chosen boundaries for each HIRA are based upon public usage of the area for recreational purposes and available amenities maintained by the USFS within each area. The HIRA's intent is to represent the areas of highest recreational usage and Developed Recreation opportunities in the Forest. Recreational users are required to purchase a National Forest Adventure Pass or an America the Beautiful Interagency Pass in order to use recreational resources within a HIRA. The purpose of this fee-based program, as authorized under the Federal REA, is to generate necessary funding to pay for backlogged maintenance of recreational resources throughout the Forest. Backlogged maintenance includes maintaining trails, cleaning restrooms, picking up trash, removing litter and graffiti, providing visitor information, and fulfilling other services as needed. Portions of Alternative 2 and Alternative 2a would be situated in the Rowher/Drinkwater HIRA..

Developed and Dispersed Recreation resources within the study area are described in further detail below.

Developed Recreation

Off-Highway Vehicle Trails and Open Riding Areas

The USFS has designated an interconnected system of OHV trails, forest roads designated for OHV use, and Open Riding Areas throughout the ANF. These trails, roads and riding areas provide a range of recreational opportunities to OHV recreationists of all skill levels. For the safety of OHV recreationists, OHV use is not permitted on the same roadways as passenger vehicle travel. The types of vehicles that are permitted on Forest Service roads are defined by one of five Operational Maintenance Levels (OMLs) that are assigned to each USFS roadway.

OMLs are guidelines for the degree of maintenance that the USFS invests in a road, towards the purpose of managing each road and the surrounding NFS lands for their intended uses. The USFS's OMLs applicable to the ANF are presented in Table 3.2.5-2.

TABLE 3.2.5-2. ANGELES NATIONAL FOREST ROADWAY OPERATIONAL MAINTENANCE LEVEL GUIDELINES

Maintenance Guidelines	OML 1	OML 2	OML 3	OML 4	OML 5
Shoulder	n/a*	Maintain only as necessary for planned traffic.	Maintain existing shoulders commensurate with the traveled way.	Same as OML 3.	Maintain to the same standard as the traveled way.
Drainage	Keep drainage facilities functional and prevent unacceptable environmental damage.	Same as OML 1.	Same as OML 1.	Same as OML 1.	Same as OML 1.
Roadway	Closed to vehicular traffic. Perform work to alleviate erosion or sedimentation on or from the road. Defer removal of brush and trees from the roadway.	Manage vegetative cover as needed for planned traffic. Remove and/or repair slides and/or slumps as needed for access with high clearance vehicles to control resource damage.	Maintain existing vegetative cover. Control vegetation to provide sight distance. Repair and/or remove slides and slumps to provide passage by prudent drivers in standard passenger cars.	Same as OML 3.	Same as OML 3.
Roadside	n/a*	n/a*	Remove hazard trees and clean up litter.	Clean up litter in accordance with road management objectives. Remove hazard trees and perform landscape treatments as required.	Same as OML 4.
Structure	Inspect and repair only those items that cannot be deferred, and that are necessary to protect investment, and preserve structural integrity.	Maintain all structures to provide for the passage of planned traffic.	Maintain structures to provide for passage of planned traffic. Defer noncritical items and combine to provide for more economical project. For example, defective bridge rails, running planks, and bridge guideposts on a current basis.	Same as OML 3.	Same as OML 3.
Traffic Service	Ensure that physical closure devices and/or appropriate signing are in place and functional at the road entrance. Defer the maintenance of signs within the closure until the road is opened. Correct deferred items prior to opening the road to traffic.	Install and maintain route markers; warning, regulatory, and guide signs; and other traffic control devices to provide for planned traffic and an appropriate traffic management strategy.	Install and maintain route markers; warning, regulatory, and guide signs; and other traffic devices to provide for planned traffic.	Same as OML 3.	Install and maintain route markers; warning, regulatory, and guide signs; and other traffic devices to provide for planned traffic. Renew centerlines, edge stripes. And other pavement and curb markings as needed to provide for planned traffic.

Source: USFS, Technology & Development Program 2005.
* n/a: Generally no work required.

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Under special circumstances, OHV use may be permitted on an OML 3 roadway, providing that a Mixed Use Traffic Study has been completed to assess the safety risks involved with OHVs and passenger vehicles utilizing the same road. However, under normal circumstances, OHVs are restricted to OML 2 roads, thus avoiding hazards to OHV users that are created by the presence of larger vehicles on OML 3, 4, and 5 roads.

In comparison with designated OHV roads (OML 2 roads) and trails, which interconnect throughout the Forest, Open Riding Areas are designated areas where OHV recreationists are permitted to drive off trails. The 10,000 acre Rowher Flats OHV Area includes three OHV Staging Areas, which are where OHVs may be dropped off by their transport vehicles, which can also park in the Staging Area if a valid National Forest Adventure Pass is displayed. Rowher Flats is open to motorcycles, ATVs, and four-wheel drive vehicles and also consists of an entrance road, restrooms, trails, and signs. Overnight camping is allowed, although there are no developed camping facilities and no available water. Alternatives 2 and 2a are the only alternatives that would impact this area, or any currently open, significant authorized OHV areas.

Multi-Use Recreational Trails

There are more than 557 miles of hiking and equestrian trails, including a number of trailheads, within the ANF. The Pacific Crest Trail (PCT) makes up 176 miles of these trails. With the exception of the PCT and trails located within designated wilderness areas, trails in the ANF are open for mountain biking and equestrian use (terrain permitting). Throughout the ANF, trails provide access to recreational and wilderness resources such as campgrounds and backcountry camping areas, day use areas and picnic areas, scenic vistas, fishing and hunting areas, and designated wilderness areas. There is a wide variety of hiking, mountain biking, and equestrian trails located throughout the ANF and within the study area. The specific names and locations of trails that would be crossed by the Proposed Action or Alternatives are presented in Appendix F, Table F-13 of this Final EIS/EIR. The PCT is also discussed in further detail below.

Pacific Crest National Scenic Trail

The PCT is 2,650 miles long, extending from Mexico to Canada and running generally along the north-south oriented mountain ridges of California (Sierra Nevada), Oregon, and Washington (Cascade Range). The PCT traverses both public and private lands along its multi-state alignment. In 1968, the United States Congress designated the PCT as one of the first scenic trails in the National Trails System. Use of the PCT is limited to non-mechanized means of travel.

The Pacific Crest Trail Association (PCTA) is a non-profit membership group dedicated to the preservation and protection of the trail. In 1993, the PCTA signed a Memorandum of Understanding (MOU) with the USFS and other land management agencies including the U.S. Department of the Interior's (DOI) National Park Service (NPS) and the Bureau of Land Management (BLM). This MOU identifies the PCTA as the federal government's "major partner" in the management of the PCT. Overall management of the PCT is provided by the USFS within the ANF, and by the BLM on public lands under its jurisdiction.

The PCT crosses through the northern portion of the ANF (Santa Clara/Mojave River Ranger District) in a south-to-north direction. Although the trail is usually situated on ridgelines, it is routed off ridges in several places due to a lack of necessary easements through private property.

The PCT crosses through the central portion of the ANF (Santa Clara/Mojave Rivers Ranger District) in a west-east direction, following a natural topographic divide between the Soledad Front Country Place and the Angeles High Country Place.

Campgrounds, Picnic Areas, and Trailheads

Campgrounds and picnic areas are popular with public recreationists. A National Forest Adventure Pass must be purchased for vehicles parked in non-fee campgrounds, and a special permit is required for group camps. The Rowher/Drinkwater HIRA includes the Streamside and Zuni campgrounds, as well as the Los Cantiles picnic area/day use area.

Trailheads that provide access to the recreational trails network described above are also situated throughout HIRAs, often in the same vicinity as campgrounds or picnic areas and day use facilities. Green Valley Station, an administration/interpretive site and trailhead, is located within the Alternative 2 study corridor. Two other trailheads (Drinkwater OHV Staging Area and Rowher Flats OHV Area) are located outside of a study corridor, but within proximity to an Alternative. The Drinkwater OHV Staging Area, a parking/staging trailhead for the Drinkwater OHV system, is located near Alternatives 2 and 2a. The Rowher Flats OHV Area, a staging/trailhead for the Rowher Flats OHV system, is situated near Alternative 3.

Recreation Residences

Recreation residences on the ANF include privately owned cabins authorized under Special Use Authorizations for up to 20 years. Recreation residences in the study area are concentrated in two areas (Bouquet Canyon and San Francisquito Canyon). Cabins are intended for weekend, vacation, or seasonal use only.

Concessionaires

Concessionaires (private businesses that operate and maintain government recreation facilities) operate under Special Use Authorization to the USFS within the ANF. A Place to Shoot, a permitted commercial target shooting range open to the public, is situated in proximity to Alternatives 2 and 2a. Private facilities under permit within the ANF are located in proximity to Alternatives 1, 2, and 2a.

Dispersed Recreation

Dispersed Recreation is inclusive of recreational activities that occur outside of concentrated use areas such as campgrounds, picnic areas, and maintained trails.

Hunting: Hunting is permitted throughout the ANF during seasons that are designated and managed by the California Department of Fish and Game (CDFG). Hunters must hold a valid California hunting license to participate in recreational hunting. The CDFG manages recreational deer hunting throughout the State in separate zones; the Project area is within Zone D-11.

Fishing: Recreational fishing is also a popular day-use activity in the ANF. A variety of designated fishing areas are available to the public, which are accessible using NFS roads, designated OHV routes, and multi-use hiking trails. Some fishing areas are restricted to shoreline fishing only, while others allow for fishing from boats. Permits are required for all fishing activities. The CDFG stocks some waterways within the ANF with fish. Bouquet

Canyon Creek is stocked (as long as there is enough water flow) with rainbow trout by the CDFG from late spring though summer. Access to the creek is from Bouquet Canyon Road. The creek is overseen by the CDFG and requires an Adventure Pass.

Camping: Dispersed (also known as remote or primitive) camping occurs outside of developed campgrounds. It occurs in both wilderness and non-wilderness areas, with or without a vehicle; however, most dispersed camping use occurs by vehicle. Dispersed camping is generally allowed forest-wide in the ANF.

Driving for Pleasure: Driving for pleasure often is the first or only recreation experience visitors have on the national forests. The ANF contains one scenic highway and byway (Angeles Crest). In addition to this designated roadway, other rural routes offer opportunities for viewing scenery and other activities over less-traveled roads. These rural routes are roads that are not managed specifically for driving pleasure but offer loops and connections to other outstanding scenery. Rest stops, turnouts, scenic vistas, interpretive panels and roadside picnic areas enhance the driving for pleasure recreation opportunity.

Wildlife and Nature Viewing: Wildlife and nature viewing are often among the top five activities in which visitors participate. Wildlife and nature viewing is widespread and mostly unrestricted. Some of the most popular opportunities focus around bird watching (migratory birds at several riparian locations) and spring wildflower viewing. Sightings of large mammals are rare but valued by the public. The national forests participate in the State of California Watchable Wildlife Program and the Forest Service Naturewatch programs (Eyes on Wildlife, Fishwatch and Celebrating Wildflowers).

Snowplay: Winter views of snow-covered mountains from the Los Angeles basin draw visitors to numerous popular dispersed snowplay areas across the ANF, often just places where motorists can pull their vehicles over to the side of the road.

Waterplay: It usually involves sitting by, wading through, or swimming in water. There may be associated activities near waterplay in riparian areas, including picnicking, large family gatherings, and cooking. Waterplay use is very high in the lower elevation canyons of the ANF.

Rock Climbing: Some rock climbing and rappelling occurs in the Santa Clara/Mojave Rivers Ranger District of the ANF.

Designated Wilderness Areas

There are several wilderness areas designated on NFS lands in the ANF; however, no wilderness areas are located within 0.5 mile of the Proposed Action and Alternatives.

Wild and Scenic Rivers

Congress enacted the Wild and Scenic Rivers Act (WSRA) in 1968 to preserve select rivers' free-flowing condition, water quality, and outstandingly remarkable values. It allows existing uses of a river to continue and future uses to be considered, so long as existing or proposed use does not conflict with protecting river values.

Rivers may be identified for study by an act of Congress under Section 5(a), or through federal agency-initiated study under Section 5(d)(1). Section 5(d)(1) directs federal agencies to consider the potential of Wild and Scenic Rivers in their planning processes, and its application has resulted in numerous individual river designations and state- and area-specific legislation. A river corridor is defined as a river and the adjacent area within the boundaries of a designated river, or a river and the adjacent area within one-quarter mile of the banks of a congressionally authorized study river (one-half mile for designated/study rivers authorized under the Alaska National Interest Lands Conservation Act).

Both Sections 5(a) and 5(d)(1) studies require determinations to be made regarding a river's eligibility, classification and suitability. Eligibility and classification represent an inventory of existing conditions. *Eligibility* is an evaluation of whether a river is free-flowing and possesses one or more outstandingly remarkable values including scenery, recreation, geology, fish and wildlife, history, cultural (prehistoric), or similar values. If found eligible, a river is analyzed as to its current level of development (water resources projects, shoreline development, and accessibility) and a recommendation is made that it be placed into one or more of three *classes*—wild, scenic or recreational. The final procedural step, *suitability*, provides the basis for determining whether to recommend a river as part of the National System. Suitable uses are those compatible with protecting and enhancing the outstandingly remarkable values for which the river was designated or found eligible.

New proposals include facilities, management actions, or uses on NFS land and are not allowed if they have the potential to affect the eligibility or potential classification of the river segment. A portion of the San Francisquito Canyon, determined eligible for Wild and Scenic River designation in the ANF LMP, is located within the study area.

Inventoried Roadless Areas

Inventoried Roadless Areas (IRAs) are undeveloped areas on NFS lands that are inventoried as lacking authorized roadways as determined through the Forest Service's Roadless Area Review and Evaluation process. IRAs may include trails suitable for hiking and equestrian use, but do not include NFS authorized roads that would accommodate either full-sized vehicles (including high-clearance and passenger vehicles) or OHVs. IRAs are intended to protect areas for their natural or wilderness qualities; self-contained ecosystems; and undeveloped areas adjacent to existing Wilderness Areas (USFS 2005).

Three IRAs—Red Mountain, Salt Creek, and Tule—were identified within the study area. Current USFS regulations regarding IRA conservation do not allow roads to be built or reconstructed in these areas. The regulations do not prohibit issuance of a Special Use Authorization in IRAs, but a project would have to be constructed by helicopter or some means other than road building.

State

State Water Project

The California Aqueduct, which is part of the California State Water Project, provides year-round recreational fishing opportunities (at certain locations), primarily for striped bass and catfish. Other recreational uses, such as boating and swimming, are not permitted.

Pyramid Lake is an artificial lake formed by Pyramid Dam on Piru Creek. The earth and rock dam was built by the California Department of Water Resources. Pyramid Lake is part of the California Aqueduct. Downstream is Castaic Lake, which is the terminus of the west branch of the aqueduct. Pyramid and Castaic Lakes act as the upper and lower reservoirs for a 1,495 megawatt pumped storage hydroelectric plant. Pyramid Lake offers boating, fishing, jet skiing and picnic areas (including five unique sites that are accessible only by boat), and courtesy docks.

California Department of Parks and Recreation

The California Department of Parks and Recreation manages 280 units throughout the State. Units are classified by statute and can include, but are not limited to, State Parks, State Recreation Areas, State Vehicular Recreation Areas, State Reserves, and State Historic Parks. Units of the State Parks system can also include sub-units, such as State Wilderness, Cultural Preserves, and Natural Preserves. These parks protect and preserve culturally and environmentally sensitive structures and habitats, threatened plant and animal species, ancient Native American sites, and historic structures and artifacts.

The California State Parks' Planning Division develops the California Outdoor Recreation Plan: the statewide master plan for parks, outdoor recreation, and open space for all recreation providers. The California Outdoor Recreation Plan provides policy guidance to all public agencies (federal, State, local, and special districts) engaged in providing outdoor recreational lands, facilities and services throughout California.

Castaic Lake State Recreation Area

Castaic Lake State Recreation Area, located at the northern end of the Santa Clarita Valley, is home to one of the largest State Water Project reservoirs in Southern California. Castaic Lake's recreational facilities were built by the Department of Water Resources and the State Department of Parks and Recreation, but the 8,000-acre park is operated and maintained by the Los Angeles County Department of Parks and Recreation. The facility consists of two separate lakes—the main reservoir and lagoon/afterbay. The main reservoir forms a V-shaped body of water with approximately 29 miles of shoreline. The east arm of the lake is open to boating, fishing and sailing, and a portion is open to water-skiing and wakeboarding. The west arm is reserved for water-skiing and wakeboarding, with a special use area for all personal watercraft. Fishing in the west arm is allowed only in the coves. Ramps are provided on the east and west sides of the dam, and picnic facilities are located in both areas. The recreation area offers self-contained overnight camping on the lagoon/afterbay. Campgrounds containing 60 campsites are located on the east side and can accommodate travel trailers, campers, and RVs. Tent camping is also available on a limited basis. The campgrounds also include a picnic area and provide access to areas designated for boating, swimming (seasonal), and fishing.

According to the California State Parks, Office of Grants and Local Services (August 2008), Castaic Lake Recreation Area is listed as a Land and Water Conservation Fund Program funded project. Specific information related to the funding is provided below.

Castaic Afterbay Development 1971/72

- Picnic tables, barbecues, boating, restrooms, parking, roads, landscaping, shade structure, lighting, utilities, comfort stations, dressing rooms.

Castaic Lake SRA Development 1980/81

- Parking lots, roads, walkways.

The Castaic Sports Complex is located just south of Castaic Lake and provides a number of sports opportunities to the public.

Antelope Valley California Poppy Reserve

The Antelope Valley California Poppy Reserve is located 15 miles west of Highway 14, approximately three miles northwest of the existing Antelope Substation. The land is owned by the State of California and is managed by the California Department of Parks and Recreation. The reserve includes 1,745 acres of protected land in the Antelope Buttes where the California State Flower, the California poppy, flourishes every spring. There is a Visitor's Center and a parking area at the reserve, as well as seven miles of trails, which include a paved section for wheelchair access. OHV use is popular immediately to the north of the reserve. Peak visitation at the Antelope Valley California Poppy Reserve occurs from March to May of each year (CA State Parks 2005).

The Antelope Valley California Poppy Reserve Resource Management Plan/General Development Plan/ Environmental Report guides the future development and management of the Antelope Valley California Poppy Reserve. The Plan also identifies lands outside existing reserve boundaries that are of prime concern to present and future environmental values, and to visitor use of the reserve.

California Department of Fish and Game

The Department of Fish and Game maintains native fish, wildlife, plant species and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. The department is also responsible for the diversified use of fish and wildlife, including recreational, commercial, scientific and educational uses. Department of Fish and Game owned and operated lands (undesignated) are located in the study area.

California Back Country Discovery Trails

The goal of the California Back Country Discovery Trail system is to provide long-distance OHV opportunities from Mexico to Oregon (CA State Parks 2005).

State Conservancies

The California Resources Agency is responsible for conserving, enhancing, and managing the State's natural resources, including the land, water, wildlife, parks, minerals, and historic sites. State Conservancies are independent agencies under the California Resources Agency. Each has a different mission in specific geographic areas around the State. While their missions vary, their primary objectives include protecting the natural environment, increasing public access and recreation opportunities and preserving and enhancing wildlife habitat.

Santa Monica Mountains Conservancy
The Santa Monica Mountains Conservancy mission is to strategically buy, preserve, protect, and restore land in Southern California, forming an interlinking system of urban, rural, and river parks, open space, trails, and wildlife habitats easily accessible to the general public. Santa Monica Mountains Conservancy Parkland/Property is located in the study area.

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
Legislation created the Conservancy in 1999 and a year later it created a Parkways and Open Space Plan to preserve urban open space and habitat for the enjoyment and appreciation of present and future generations. The Conservancy sponsors projects providing low-impact recreation, education, wildlife habitat restoration, and watershed improvements that prioritize river-related recreation, re-vegetating, aesthetic improvements, and wildlife habitat. San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy property is located in the study area.

Local

Los Angeles County Riding and Hiking Trails

The County of Los Angeles Department of Parks and Recreation manages and maintains a network of multi-use trails that runs throughout Los Angeles County, including parts of the study area. All trails are open for hiking, mountain biking, and equestrian use, unless otherwise noted. The system has been developed in conjunction with trails provided by other federal and State agencies.

Antelope Valley Area Trails

The Antelope Valley Area Trails Plan is a Master Trails Plan developed and administered by the Antelope Valley Conservancy in conjunction with the City of Lancaster, the City of Palmdale, and the County of Los Angeles. The purpose of this Master Trails Plan is to interlink regional and local trails, including USFS trails and the PCT, for recreational opportunities such as hiking and horseback riding.

Planned Development of Recreational Areas

Ritter Ranch Specific Plan and City Ranch Specific Plan
Park sites are depicted in the Ritter Ranch and City Ranch Specific Plans, which have been adopted by the Palmdale City Council. Development of these parks would occur during build-out of the specific plan areas, based on the park phasing and improvement plans contained within each document. A recreation center is included in the Ritter Ranch development and is planned to occupy 4.7 acres of land at the northeast corner of City Ranch Road and Ranch Center Drive.

Community

In addition, some communities offer parks, baseball fields, walking/hiking/bicycle trails, outdoor sports activities at schools, and other opportunities.

According to the Rosamond Community Services District (RCSD) Parks System Master Plan, a strong desire for a multi-use trail system in the community exists. Specific mention was made of equestrian, hiking, and biking trails that provide for backcountry exploration, adults commuting to work, children commuting to school, and travel to adjacent communities. The master plan contains a conceptual layout of 38.5 miles of trails within the RCSD service area and an additional 85.4 miles in the District's Sphere Of Influence (SOI). Recommendations for trails within the study area are organized into two categories (Major and Local).

- Major trails would primarily make connections beyond the unincorporated community of Rosamond itself, and provide opportunities for long-distance commuting and recreational activities. Major trails within the study area include the following: M2 - Rosamond Trail; M3 - Powerline Trail; and M4 - Aqueduct Trail.
- Local Trails are intended to facilitate recreation opportunities and connections within the RCSD service area and SOI. Local trails within the study area include the following segments: L9; L10; L11; L12; and L13.

The RCSD does not currently own any developed park and recreation facilities.

Private

Recreational opportunities also exist on privately owned lands, including private campgrounds, golf courses, RV parks, and motor raceways. Activities such as hunting may be permitted on privately owned land with landowner consent.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

The addition of the new 230 kV circuit within the ROW would include only stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant. Since the existing ROW traverses the Castaic Lake State Recreation Area, recreational uses are primarily associated with this area. The new 230 kV circuit would traverse USFS Road 5N29.

Reconductoring of BR-RIN Transmission Line

The existing transmission line would be removed and used to pull the new conductor. Some of the transmission line structures would need to be modified or replaced, and/or foundations reinforced, to carry the additional weight of the new heavier conductor. All work would remain within the existing ROW.

This Project component and construction access routes would cross or run adjacent to a range of land use types, including recreational lands (CLWA Conservatory Garden and Learning Center, Whitney Canyon Park, and Mountains Recreation and Conservation Authority Property).

New Haskell Canyon Switching Station

The proposed new Haskell Canyon Switching Station site does not include recreational facilities, nor would it require the construction of new, or the expansion of existing, recreational facilities.

Expansion of Barren Ridge Switching Station

The expansion area of the Barren Ridge Switching Station would not include recreational resources.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

The Alternative 1 transmission line is characterized by both developed and dispersed recreational opportunities including areas for OHV use, camping, swimming, boating, riding and hiking trails, hunting, and wildlife observation. Existing and proposed recreational resources that would be located near or traversed by the Alternative 1 transmission line include:

Rosamond Community Services District Parks System Master Plan Trails. The master plan provides the first step in planning a comprehensive trail system and contains a conceptual layout of 38.5 miles of trails within the RCSD service area and an additional 85.4 miles in the District's Sphere Of Influence. Alternative 1 would traverse and/or be adjacent to several of these trails.

Los Angeles County Riding and Hiking Trails. Los Angeles County trails include a network of multiuse trails which are managed by the Los Angeles County Department of Parks and Recreation. Alternative 1 would traverse and/or be adjacent to several of these trails.

National Forest System Roads. National Forest System roads that would be traversed by or located adjacent to Alternative 1 include Dry Canyon Road (5N29), City Highline Motorway FR Road (6N21, OHV), Old Ridge Road (8N04) (OHV) (currently under a temporary closure), Reservoir Summit Road (7N26.1), Liebre Gulch Road (8N01, OHV), and Forest Inn Road (6N43).

Pacific Crest National Scenic Trail. The PCT enters the ANF from the eastern boundary of the Santa Clara/Mojave Rivers Ranger District, and exits the ANF from the northwestern boundary of this district. Alternative 1 would cross and/or be located adjacent to the PCT.

California Department of Fish and Game Property. California Department of Fish and Game property classified as "undesignated" would be traversed between mileposts 57.8 and 58.3 and mileposts 58.6 and 58.8.

Inventoried Roadless Areas. Alternative 1 would traverse and/or be located adjacent to the Salt Creek IRA.

Castaic Lake State Recreation Area. Alternative 1 would traverse and/or be located adjacent to the Castaic Lake State Recreation Area.

Recreational resources crossed by milepost are presented in Appendix F, Table F-12 of this Final EIS/EIR.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

The Alternative 2 transmission line is characterized by both developed and dispersed recreational opportunities including areas for OHV use, backpacking, camping, riding and hiking trails, hunting, and wildlife observation. Existing and proposed recreational resources that would be located near or traversed by the Alternative 2 transmission line include:

Rosamond Community Services District Parks System Master Plan Trails. The master plan provides the first step in planning a comprehensive trail system and contains a conceptual layout of 38.5 miles of trails within the RCSD service area and an additional 85.4 miles in the District's Sphere Of Influence. The Alternative 2 transmission line would traverse and/or be adjacent to several of these trails.

Los Angeles County Riding and Hiking Trails. Los Angeles County trails include a network of multiuse trails which are managed by the Los Angeles County Department of Parks and Recreation. The Alternative 2 transmission line would traverse and/or be adjacent to several of these trails.

National Forest System Roads. National Forest System roads that would be traversed or located adjacent to the Alternative 2 transmission line include Pettinger Canyon Road (5N28), City Highline Motorway FR Road (6N21) (OHV), Burns Road (7N01) (OHV), Leona Divide (6N04.2) (OHV), and South Portal (7N02) (OHV).

Pacific Crest National Scenic Trail. The PCT enters the ANF from the eastern boundary of the Santa Clara/Mojave Rivers Ranger District, and exits the ANF from the northwestern boundary of this district. The Alternative 2 transmission line would cross and/or be located adjacent to the PCT between milepost 46.9 and milepost 47.3.

San Francisquito Canyon Eligible Wild and Scenic River. San Francisquito Canyon, an eligible Wild and Scenic River, would be traversed and/or adjacent to the Alternative 2 transmission line.

Rowher-Drinkwater Flats High Impact Recreation Area. Designated recreation areas near the Alternative 2 transmission line include A Place to Shoot (target shooting range), picnicking, camping, and recreation facilities. OHV use (motorcycles, ATVs, and four-wheel driving) is also a popular recreation activity. Off-highway travel is restricted to designated motor vehicle routes including roads, trails, and Open Areas.

Red Mountain Inventoried Roadless Area. The Red Mountain IRA would be located 1,500 feet west of the Alternative 2 transmission line. This IRA includes 56,320 acres of remote undeveloped backcountry.

California Back Country Discovery Trail. Within the ANF, California Back Country Discovery Trails would be traversed and/or adjacent to Alternative 2. These OHV systems provide a range of recreation opportunities for OHV enthusiasts through the development of an integrated system of trails and low-maintenance standard roads (USFS 2005).

Recreational resources crossed by milepost are presented in Appendix F, Table F-13 of this Final EIS/EIR.

Alternative 2a

As described in the Land Use Section, the Alternative 2a transmission line is 63 miles long and would be located to the north and around the unincorporated community of Green Valley (Green Valley Re-route). The Green Valley Re-route would occur within the boundary of the ANF (Santa Clara/Mojave Rivers Ranger District) and Los Angeles County.

Recreational resources crossed by milepost are presented in Appendix F, Table F-14 of this Final EIS/EIR.

Alternative 3

The Alternative 3 transmission line is characterized by both developed and dispersed recreational opportunities. Much of the land along the Alternative 3 transmission line is privately owned. Recreational activities include areas for OHV use, riding and hiking trails, and open space purposes. Existing and proposed recreational resources that would be located near or traversed by the transmission line include:

Rosamond Community Services District Parks System Master Plan Trails. The master plan provides the first step in planning a comprehensive trail system and contains a conceptual layout of 38.5 miles of trails within the RCSD service area and an additional 85.4 miles in the District's Sphere Of Influence.

Los Angeles County Riding and Hiking Trails. Los Angeles County trails include a network of multiuse trails which are managed by the Los Angeles County Department of Parks and Recreation.

Pacific Crest National Scenic Trail. The PCT enters the ANF from the eastern boundary of the Santa Clara/Mojave Rivers Ranger District, and exits the ANF from the northwestern boundary of this district. Alternative 3 would cross the PCT between milepost 62.0 and milepost 62.1.

Recreational resources crossed by milepost are presented in Appendix F, Table F-15 of this Final EIS/EIR.

3.2.6 PUBLIC SERVICES AND UTILITIES

Introduction

This section identifies and describes the public services and utilities systems affected by the Proposed Action and Alternatives. This section examines the affected environment and presents the regulatory framework that is relevant to existing services and systems in the BRRTP area.

Overview of Methodology and Analysis Area

Public services (i.e., fire protection, police protection, schools) and utilities (i.e., electricity, natural gas, water, wastewater, and landfill facilities) in the region are typically provided by the applicable jurisdiction. Transmission elements of the Proposed Action and Alternatives would traverse USFS land in the Angeles National Forest (ANF), BLM land, unincorporated communities in Kern and Los Angeles Counties, and the cities of Lancaster, Palmdale, Santa Clarita, and Los Angeles. The proposed Haskell Canyon Switching Station would be located on LADWP-owned land near the southern boundary of the ANF. Current data regarding providers and their service capacities was compiled through a review of land use plans, online resources, existing environmental documents, and personnel communications. Entities providing public services and utilities in the BRRTP area are described in detail in the sections below.

Fire Protection and Emergency Medical Response Services

Kern County Fire Department

The Kern County Fire Department (KCFD) is an organization comprising over 625 permanent employees protecting an area which spans over 8,000 square miles. The department provides fire protection services for over 500,000 citizens living in the unincorporated areas of Kern County and the cities of Arvin, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi and Wasco. Over 546 uniformed firefighters are stationed in 46 fire stations throughout Kern County. Added to this, the Kern County Fire Department has 14 Mutual Aid Agreements with neighboring fire suppression organizations to further strengthen the emergency services available to customers. Specifically, services provided by the department include fire prevention and suppression, search, rescue, and air operations, arson investigation, emergency medical services, and hazardous materials mitigation (KCFD 2010).

Three KCFD fire stations are found within 10 miles of the BRRTP and are the most likely to serve the Project area: Tehachapi Station, Mojave Station, and the Rosamond Station. Table F-17 in Appendix F of this Final EIS/EIR provides the location and operational detail of these stations.

Los Angeles County Fire Department

The Los Angeles County Fire Department (LACoFD) provides fire protection, emergency response, disaster response, and related services to unincorporated areas of Los Angeles County as well as the cities of Lancaster, Palmdale, and Santa Clarita. A Mutual Aid agreement is in place between the USFS and LACoFD for fire protection services, and the California Department of Forestry contracts with the LACoFD for the protection of State Responsibility Areas (SRAs) which include privately owned forestlands, rangelands, and watersheds.

The LACoFD is divided into three Regional Emergency Operations Bureaus (North, Central, and East), which serve a total 2,296 square mile service area. The BRRTP area is served by Battalions 6, 11, and 17 within the North Operations Bureau area of the LACoFD; however, in the incidence of fire, all stations within the County would respond as necessary, per the California Master Mutual Aid Agreement. Tables F-18 and F-19 in Appendix F of this Final EIS/EIR identify fire stations and equipment resources within the BRRTP Fireshed (LACoFD 2010).

Los Angeles Fire Department

The Los Angeles Fire Department (LAFD) is the largest metropolitan Fire Department in the Western United States, with 106 Fire Stations and over 3,600 personnel providing fire protection, firefighting, emergency medical care, rescue, hazardous materials mitigation, and disaster response services to over four million people within a 470 square mile service area. The LAFD provides fire protection services within the city limits for the City of Los Angeles.

USFS (ANF)

In the ANF, the responsibility of fire protection falls upon the USFS through their implementation of the USFS Fire Management Program. The Fire Management Program is executed by the USFS in cooperation with the LACoFD, and includes elements of fire prevention, fire suppression, and fire use. As a wildland-urban interface, communities on the fringe of the Forest boundary are susceptible to fire under conditions of wind. Aggressive fire suppression and prevention strategies are implemented to protect life and property damage in the adjacent communities.

The Southern California Geographic Coordination Center is charged with the mobilization of federal resources within a geographic area that extends from the Stanislaus National Forest to the Cleveland National Forest. Fire response resources may be mobilized from across the nation in support of wildland fire incidences; however, for the purposes of evaluating local capabilities to respond to a local wildfire, Tables F-20 and F-21 in Appendix F of this Final EIS/EIR identify ANF fire stations and equipment resources available in the BRRTP fireshed.

Traffic and Law Enforcement Services

Kern County Sherriff's Department

The Kern Count Sherriff's Department (KCSD) is responsible for administering the countywide jail system and providing police protection services throughout the county of Kern. Services provided include crime prevention, search and rescue, special operations (e.g., bomb squad, S.W.A.T.), civil process duties (e.g., paperwork processing for lawsuits filed), transportation to the courts, and coroner services.

The KCSD headquarters facility is located in Bakersfield, and 15 substations provide patrol services within a 400 square mile area. Eight unincorporated communities are located within the KCSD service area: Grapevine, Fort Tejon, Lebec, Frazier Park, Lake of the Woods, Los Padres Estates, Piñon Pines, and Pine Mountain Club. The Rosamond, Mojave, and Frazier Park Substations would serve as the primary responders for police protection services for the BRRTP area and vicinity. The Off-Highway Vehicle Enforcement Team, based out of the KCSD

Ridgecrest Field Office, also provides law enforcement and patrol services to the remote and less accessible areas of Kern County (i.e., Rosamond/Mojave desert areas, and Tehachapi Mountains), particularly during the off-highway vehicle season (KCSD 2010).

Los Angeles County Sheriff's Department

The Los Angeles County Sheriff's Department (LASD) is the second largest municipal law enforcement agency in the nation, providing police protection services to roughly one million residents in the unincorporated communities of Los Angeles County as well as forty contracted cities (e.g., Lancaster, Palmdale, Santa Clarita) (LASD 2010a). LASD Region 1 patrol stations serving the BRRTP area include the Lancaster, Palmdale, and Santa Clarita Valley Stations.

California Highway Patrol

Traffic regulation enforcement, emergency response coordination, and other assistance along major roadways such I-5 and State Routes 14 and 138 are provided by the California Highway Patrol (CHP). The statewide law enforcement agency is also responsible for assisting other public agencies with law enforcement activities (e.g., accident investigations, vehicle theft investigations) and the oversight of emergency incidence management (e.g., assistance to disabled or abandoned vehicles) on the State's highway transportation system.

Law Enforcement in the Angeles National Forest

The BRRTP would traverse lands under the management of the Santa Clara District Office of the ANF. Law enforcement in the ANF is provided by Law Enforcement Officers and Forest Protection Officers. In addition, the Los Angeles County Sherriff's Department (Palmdale office) patrols the ANF in OHVs. The team deploys between two and eight members to problem areas, on varying days and times. This unit also has a volunteer unit consisting of 82 members (Los Angeles County Sheriff's Department 2009a).

Law Enforcement on Public Lands Administered by the Bureau of Land Management

The BRRTP would traverse lands under the management of the Ridgecrest Field Office of the BLM. Law enforcement on these public lands is provided by BLM Rangers, local Kern County Sheriffs and the California Highway Patrol. The BLM force includes nine Rangers and one Chief Ranger (BLM 2010).

School Districts

The BRRTP area overlaps with the following school districts; Southern Kern USD, Tehachapi USD, Antelope Valley HSD, Eastside Union SD, Lancaster ESD, Westside Union ESD, Palmdale ESD, and Acton Agua-Dulce USD. Table F-22 in Appendix F of this Final EIS/EIR identifies schools located within one-quarter mile of the BRRTP area.

Utilities Systems

Table 3.2.6-1 identifies utility service providers in the BRRTP area.

TABLE 3.2.6-1. UTILITY SERVICE PROVIDERS BY JURISDICTION

Jurisdiction	Natural Gas	Electric Service	Water Service	Wastewater Service	Solid Waste Management Service
Kern County	Pacific Gas and Electric, Southern California Gas Company	Pacific Gas and Electric, Southern California Gas Company	Antelope Valley East Kern Water Agency, Mojave Water Agency	Kern County Waste Management Department	Kern County Waste Management Department
Los Angeles County	Southern California Gas Company	City of Los Angeles, Department of Water and Power; Southern California Edison	Los Angeles County Department of Public Works; City of Los Angeles Department of Water and Power; Antelope Valley-East Kern Water Agency; Central/West Basin Municipal Water District; Calleguas Municipal Water District, Camrosa Water District, Casitas Municipal Water District - Castaic Lake Water Agency, Central Basin Municipal Water District; Las Virgenes Municipal Water District, Metropolitan Water District of Southern California	Los Angeles County Sanitation District, Santa Clarita Valley Sanitation District	Chiquita Canyon Landfill/Consolidated Disposal Service; Antelope Valley Recycling and Disposal Facility/Waste Management, Inc.; Sunshine Canyon Landfill/BFI Waste Systems of North America, Inc.; Lancaster Landfill/Waste Management, Inc.
City of Lancaster	Southern California Gas Company	Southern California Edison	Los Angeles County Water Works; Antelope Valley-East Kern Water Agency	Los Angeles County Sewer Maintenance	Lancaster Landfill/Waste Management, Inc.; Antelope Valley Recycling and Disposal Facility/Waste Management, Inc.
City of Palmdale	Southern California Gas Company	Southern California Edison	Palmdale Water District; Antelope Valley-East Kern Water Agency	Los Angeles County Sanitation District	Antelope Valley Public Landfill I/Waste Management, Inc.
City of Santa Clarita	Southern California Gas Company	Southern California Edison	Newhall County Water District; Santa Clarita Water Company, Valencia Water Company, and Castaic Lake Water District; Central Basin Municipal Water District	Los Angeles County Sewer Maintenance, Santa Clarita Valley Sanitation District	Chiquita Canyon Landfill/Consolidated Disposal Service; Antelope Valley Recycling and Disposal Facility/Waste Management, Inc.

Jurisdiction	Natural Gas	Electric Service	Water Service	Wastewater Service	Solid Waste Management Service
City of Los Angeles	Southern California Gas Company	City of Los Angeles, Department of Water and Power	City of Los Angeles Department of Water and Power	Los Angeles County Sanitation District, City of Los Angeles, Department of Public Works	City of Los Angeles Bureau of Sanitation, Department of Public Works

Sources: Los Angeles County Department of Public Works 2010, Antelope Valley East Kern Water Agency 2010; TRTP FEIS/EIR 2009; Antelope-Pardee FEIS/EIR 2005; One Valley One Vision; county and municipal general plans; CIWMB 2010; City of Los Angeles Citywide General Plan Framework FEIR

Solid Waste Landfills and Recycling Services

The waste management services identified in Table 3.2.6-1 provide solid waste disposal services through the use of landfills and permitted treatment facilities located throughout the region. Table 3.2.6-2 identifies the solid waste landfills that may serve the Project area, as well as the type of waste accepted and the remaining capacities at these facilities.

TABLE 3.2.6-2. SOLID WASTE LANDFILLS SERVING THE BRRTP AREA

County Facilities	Solid Waste Landfill Used in 2008	Waste Type Accepted by Facility	Permitted Max Disposal/ Day	Total Estimated Permitted Capacity	Total Estimated Capacity Used	Remaining Estimated Capacity
Kern County	Boron Sanitary Landfill	Ash, construction/demolition, industrial, dead animals, mixed municipal	200 tons/day	1,002,819 cy	794,187 cy	208,632 cy
	Mojave-Rosamond Sanitary Landfill	Agricultural, construction/demolition, industrial, dead animals, mixed municipal	42 tons/day	330,000 cy	-436,157 cy	Capacity is currently exceeded.
	Tehachapi Sanitary Landfill	Construction/demolition, industrial, dead animals, mixed municipal	1,000 tons/day	3,388,723 cy	2,513,849 cy	874,874 cy
Los Angeles County	Lancaster Landfill and Recycling Center	Agricultural, asbestos, construction/demolition, green materials, inert, industrial, mixed municipal tires, contaminated soil, BioSolids	1,700 tons/day	26,665,000 cy	7,576,261 cy	19,088,739 cy
	Antelope Valley Public Landfill I	Construction/demolition, inert, industrial, mixed municipal	1,400 tons/day	6,480,000 cy	3,501,857 cy	2,978,143 cy
	Antelope Valley Public Landfill II	Agricultural, construction/demolition, green materials, inert, industrial, mixed municipal	1,800 tons/day	8,206,000 cy	N/R	8,206,000 cy
	Chiquita Canyon Sanitary Landfill	Construction/demolition, green materials, inert, industrial, mixed municipal	6,000 tons/day	63,900,000 cy	34,600,000 cy	29,300,000 cy
	Sunshine Canyon Sanitary Landfill	Construction/demolition, green materials, inert, industrial, mixed municipal	6,600 tons/day	Not available	Not available	Not available

County Facilities	Solid Waste Landfill Used in 2008	Waste Type Accepted by Facility	Permitted Max Disposal/ Day	Total Estimated Permitted Capacity	Total Estimated Capacity Used	Remaining Estimated Capacity
	Sunshine Canyon Landfill Unit 2	mixed municipal	5,500 tons/day	Not available	Not available	Not available

Source: CIWMB 2010.

Electricity

As indicated in Table 3.2.6-1, electricity in the BRRTP area is provided by the City of Los Angeles Department of Water and Power (LADWP), Pacific Gas and Electric (PG&E), Southern California Gas Company, and Southern California Edison (SCE).

Water Supply

Roughly two-thirds of southern California's water supply is imported from sources in northern California through the California Department of Water Resource's State Water Project (SWP). The SWP delivers water to primary water purveyors in the region including the Antelope Valley-East Kern Water Agency, Palmdale Water District, Metropolitan Water District of Southern California, and the Castaic Lake Water Agency. These agencies supply water to local providers serving the jurisdictions potentially affected by the Proposed Action and Alternatives.

Table 3.2.6-1 lists purveyors that supplement water from the SWP with groundwater and aquifer storage and recharge. Additional water supplies serving communities in the region include over 385 miles of streams and 6,765 acres of reservoirs in the ANF.

Table 3.2.6-3 identifies primary SWP contractors serving the BRRTP area, as well as their average annual water entitlement and usage under the SWP, and projected groundwater supply.

TABLE 3.2.6-3. STATE WATER PROJECT CONTRACTORS SERVING THE BRRTP AREA (ANNUAL WATER SUPPLY)

State Water Project Contractor	Initial Request (acres/feet)	Approved Allocation (acres/feet)	Percent Initial Request Approved (acres/feet)
Antelope Valley-East Kern Water Agency	141,400	70,700	50%
Castaic Lake Water Agency	95,200	47,600	50%
Littlerock Creek Irrigation District	2,300	1,150	50%
Mojave Water Agency	82,800	41,400	50%
Metropolitan Water District of Southern California	1,911,500	955,750	50%
Palmdale Water District	21,300	10,650	50%
San Bernardino Valley Municipal Water District	102,600	51,300	50%
San Gabriel Valley Municipal Water District	28,800	14,400	50%

Source: Department of Water Resources, June 2010 State Water Project Allocation Increase.

The First and Second Los Angeles Aqueducts traverse much of the BRRTP area, conveying water by gravity across 338 miles from Mono Basin and 233 miles from the Owens Valley to LADWP customers in the City of Los Angeles. Aqueduct deliveries from these aqueducts have, on average, supplied about half of the City's water needs over the last ten years (LADWP, 2010).

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

As described in detail above, a number of entities provide public and utilities services in the BRRTP area and vicinity.

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives. Table 3.2.6-4 identifies affected jurisdictions providing public and utilities services in the area of the BRRTP components that are common to all action Alternatives.

TABLE 3.2.6-4. AFFECTED JURISDICTION(S) PROVIDING SERVICES IN BRRTP AREA (COMPONENTS COMMON TO ALL ACTION ALTERNATIVES)

Affected Jurisdiction(s)	New 230 kV circuit	Reconductoring of the BR-RIN Transmission Line	New Haskell Canyon Switching Station	Expansion of the Barren Ridge Switching Station
BLM-administered Land		X		
USFS Land (ANF)	X	X	X	
Kern County		X		X
Los Angeles County	X*	X	X*	
City of Santa Clarita		X		
City of Los Angeles		X		

*LASD patrols the ANF in OHVs, and the Fire Management Program is executed by the USFS in cooperation with the LACoFD to provide fire prevention, fire suppression, and fire use services in the ANF.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. Table 3.2.6-5 identifies affected jurisdictions providing public and utilities services in the area of the transmission line for each action Alternative.

TABLE 3.2.6-5. AFFECTED JURISDICTION(S) PROVIDING SERVICES IN THE BRRTP AREA (230 KV TRANSMISSION LINE FOR EACH ALTERNATIVE)

Affected Jurisdiction(s)	Alternative 1 Transmission Line	Alternative 2 Transmission Line	Alternative 2a Transmission Line	Alternative 3 Transmission Line
BLM-administered Land	X	X	X	X
USFS Land (ANF)	X	X	X	X
Kern County	X	X	X	X
Los Angeles County	X	X	X	X
City of Lancaster				X
City of Palmdale				X

3.2.7 HAZARDOUS WASTE AND MATERIALS

Introduction

This section describes hazardous materials in the area of the Proposed Action and Alternatives. Specifically, this section presents the conditions of the affected environment, and describes regulations, plans, and standards that pertain to environmental contamination in the BRRTP area.

Additional public health and safety hazards associated with the BRRTP are addressed in this document to satisfy requirements of the CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX). Please refer to Sections 3.2.12 (Electrical Effects), 3.2.13 (Wildfire and Fuels), and 3.2.3 (Land Use) for hazards related to wildfire, electric and magnetic fields (EMF), and aviation safety.

Overview of Methodology and Analysis Area

Hazardous materials generally include substances that are toxic, flammable, corrosive, or chemically reactive, or produce vapors when combined with water. Proposed Action and Alternatives-related contamination impacts could result from the unintentional release or mobilization of hazardous materials that, because of quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment. Soils possessing contaminant levels in excess of established regulatory thresholds for particular substances (e.g., petroleum products, lead) must be treated as hazardous waste during their excavation, transport, and disposal. For this reason, the locations of known hazardous sites must be defined in the planned Proposed Action and Alternatives excavation areas prior to construction. Current and historical land uses must also be considered to evaluate the potential for encountering unidentified hazardous substances during Proposed Action or Alternatives excavation activities. If contaminants are encountered, applicable safety standards and current law must be followed to minimize risks associated with human and environmental exposure.

The BRRTP area includes USFS land in the Angeles National Forest (ANF), BLM-administered public land, unincorporated communities in Kern and Los Angeles Counties, and the cities of Lancaster, Palmdale, Santa Clarita, and Los Angeles. The Proposed Action and Alternative rights-of-way (ROWs) traverse lands containing a variety of uses including agricultural, commercial, rural residential, and industrial uses. Activities associated with these land uses often involve the storage and/or use of hazardous materials which could be inadvertently released into the surrounding area, resulting in contamination.

Hazardous Materials Database Records Search

TrackInfo Services, LLC (TIS) conducted a review of regulatory databases on September 20, 2010 for this analysis. Such database searches by third-party specialized contractors are often used as a limited investigation to reveal the location of current and former hazardous material storage sites, use locations, and/or illicit release sites in a specific geographic area. When used in conjunction with aerial photography, field reconnaissance, and other investigative methods, these searches can be relied upon by agencies and other individuals to identify sources of known and potential contamination.

The records search radii used to query published governmental records for the Project area met or exceeded the criteria specified in the American Society for Testing and Materials (ASTM) standards[2]. A list of the regulatory agency databases searched by TIS is provided in Table 3.2.7-1. A summary of identified contamination sites is provided below. Detailed information can be found in the TIS Reports included within Appendix K.

TABLE 3.2.7-1. REGULATORY AGENCY DATABASES SEARCHED

Regulatory Database Searched	Type of Record	Regulatory Agency
NPL	National Priority List	United States Environmental Protection Agency (EPA)
NPL Delisted	National Priority List Subset	EPA
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System	EPA
NFRAP	No Further Remedial Action Plan (archive of CERCLIS sites)	EPA
RCRA COR ACT	Resource Conservation and Recovery Act Information System Sites	EPA
RCRA TSD	Resource Conservation and Recovery Act Treatment, Storage, and Disposal Facilities	EPA
RCRA GEN	Resource Conservation and Recovery Information System Generators	EPA
RCRA NLR	Resource Conservation and Recovery Act Information System Sites that no longer require reporting	
Federal IC / EC	Brownfield Management System	EPA
ERNS	Emergency Response Notification System	EPA/National Response Center
Tribal Lands	Indian Lands of the United States	U.S. Department of the Interior / Bureau of Indian Affairs
State Spills 90	Regional Water Quality Control Board's (RWQCB's) spills, leaks, investigations, and cleanups	California Environmental Protection Agency (Cal EPA)
State/Tribal SWL	Solid Waste Information System	California Integrated Waste Management Board / State Water Resources Control Board (SWRCB) / County
State/Tribal LUST	Leaking Underground Storage Tank Listing	CA SWRCB / County
State/Tribal UST/AST	Underground and Aboveground Storage Tank Listing	CA SWRCB / County /City
State/Tribal IC	Deed Restricted Sites Listing	Cal EPA / Department of Toxic Substances Control (DTSC)
State/Tribal VCP	Voluntary Cleanup Program Sites	Cal EPA / DTSC
State/Tribal Brownfields	See Mitigation and Brownfields Reuse Program Database	DTSC
State Permits	Tracks establishments and the status of their permits in relation to compliance with federal, State and local regulations.	CA EPA / County
State Other	Database of sites that are known to be contaminated as well as sites with uncharacterized properties where further studies may reveal problems	Cal EPA / DTSC
Floodplains	100 year and 500 year floodplain boundaries	Federal Emergency Management Agency
Oil & Gas Wells	Completions, pluggings, and permits	California Department of Conservation

Source: TrackInfo Services, LLC (Environmental FirstSearch Report) 2010.

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[2] The ASTM radii for specific governmental databases vary and are identified in the TIS reports.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

For inventory purposes and impact analysis, the TIS search information was reviewed for sites within one quarter mile of the Proposed Action and Alternatives. A one quarter-mile distance was used as only large contaminant spills would typically migrate that distance, potentially impacting the Proposed Action and Alternatives areas. Overall, the TIS reports concluded that there are no known significant hazardous materials concerns within 0.25 mile of the Proposed Action or Alternative routes. Sites identified in the TIS preliminary record search include solid waste landfill (SWL), State sites, Resource Conservation and Recovery Act (RCRA) generators, underground storage tank (UST), and leaking underground storage tank (LUST) sites associated with local businesses (e.g., auto repair shops, markets). No National Priority List or Superfund sites were identified within proximity to the Proposed Action or Alternatives.

Land uses can serve as good indicators of potential unknown contamination. The sections that follow describe existing land uses that would be crossed by or within the vicinity of the Proposed Action and Alternatives. The TIS Report regulatory database search results are also summarized by Alternative below.

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

Excavation activities would not be required for stringing of the new 230 kV circuit; therefore, preexisting soil and/or groundwater contaminants would not be exposed and mobilized by construction of this Project component.

Reconductoring of the BR-RIN Transmission Line

Between the Barren Ridge and Haskell Canyon Switching Stations, land uses and known hazardous materials sites within 0.25 mile of the BR-RIN route are the same as the Alternative 2 230 kV transmission line route (see Table 3.2.7-2). Where the ROW would traverse the cities of Santa Clarita and Los Angeles, a number of industrial and commercial land uses that would be located adjacent to the ROW are likely to use and/or store materials which would be considered hazardous; however, the likelihood of encountering and mobilizing these substances would be low since no Proposed Action or Alternatives excavation (i.e., tower replacement) would occur on lands south of Haskell Canyon.

New Haskell Canyon Switching Station Area

No known hazardous materials sites were identified within 0.25 mile of this Project component (TIS FirstSearch Reports 2010).

Barren Ridge Switching Station Expansion Area

The expansion area is currently vacant and no known hazardous materials sites were identified within 0.25 mile of this Project component (TIS FirstSearch Reports 2010).

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

No known hazardous materials sites that pose a potential contamination threat were identified within 0.25 mile of 230 kV transmission line in Alternative 1 (TIS FirstSearch reports 2010).

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

As summarized below in Table 3.2.7-2, two known hazardous materials sites were identified within 0.25 mile of the proposed route, including a tire waste dumpsite operated by an auto dismantler in Kern County (Dollahite Auto Wrecking), and an underground storage tank used by the Green Valley Market for gasoline storage with no history of contamination (TIS FirstSearch Reports 2010).

TABLE 3.2.7-2. HAZARDOUS MATERIALS SITES IDENTIFIED WITHIN 0.25 MILE OF THE ALTERNATIVE 2 230 KV TRANSMISSION LINE

Site Name and Address	Database Type(s)	Approximate Distance to BRRTP Component	Notes
Dollahite Auto Wrecking 6770 Backus Road Mojave, CA 93501	SWL	0.22 mile SE of proposed route	Auto dismantler, accepting tire waste.
Green Valley Market 16166 W Spunky Canyon Road Green Valley, CA 91390	UST	0.19 mile SE of proposed route	UST used for gasoline storage. No spill history reported.

Source: TrackInfo Services, LLC (Environmental FirstSearch Report) 2010.

Alternative 2a

Outside of the ANF, known hazardous materials sites within 0.25 mile of the Alternative 2a transmission line route would be the same as Alternative 2 and include a tire waste dumpsite in Kern County (see Table 3.2.7-3). Within the ANF, no known hazardous materials sites were identified within 0.25 mile of the ROW (TIS FirstSearch Reports 2010).

TABLE 3.2.7-3. HAZARDOUS MATERIALS SITES IDENTIFIED WITHIN 0.25 MILE OF THE ALTERNATIVE 2A 230 KV TRANSMISSION LINE

Site Name and Address	Database Type(s)	Approximate Distance to BRRTP Component	Notes
Dollahite Auto Wrecking 6770 Backus Road Mojave, CA 93501	SWL	0.22 mile SE of Alternative 2a route	Auto dismantler, accepting tire waste.

Source: TrackInfo Services, LLC (Environmental FirstSearch Report) 2010.

Alternative 3

Table 3.2.7-4 summarizes the four known hazardous materials sites that were identified within 0.25 mile of the Alternative 3 transmission line. The closest known contamination site to the Alternative 3 transmission line ROW is the DTSC-monitored Mint Canyon Space Ordnance Systems Facility, located approximately 0.08 to 0.22 mile northwest and down-gradient of the ROW. Other known sites include a tire waste dumpsite, a former LUST clean-up site, and an underground storage tank used by the Pepper Tree Market with no known spill history.

TABLE 3.2.7-4. HAZARDOUS MATERIALS SITES IDENTIFIED WITHIN 0.25 MILE OF THE ALTERNATIVE 3 230 KV TRANSMISSION LINE

Site Name and Address	Database Type(s)	Approximate Distance to BRRTP Component	Notes
Dollahite Auto Wrecking 6770 Backus Road Mojave, CA 93501	SWL	0.22 mile SE of Alternative 3	Auto dismantler, accepting tire waste.
Airsearch MFG Co of CA / Space Ordnance Systems / Mint Canyon Facility 34854 Peterson Road Santa Clarita, CA 91350	RCRA GEN, UST, LUST, NFRAP, STATE	0.08-0.22 mile NW of Alternative 3 route	Final remedial action taken in 1993 consisted of the excavation of soils and sumps. Excavated materials were transported and disposed of at Class I landfill. Reactive waste excavated from the small burn pit was stabilized on-site and then transported out of state for incineration.
Pepper Tree Market 9661 W Sierra HWY South Antelope Valley, CA 91350	UST	0.20 mile SE of Alternative 3 route	No spill history reported.
29880 Bouquet Canyon Road N Saugus, CA 91350	LUST	0.24 mile NE of Alternative 3 route	Former LUST cleanup site. Remediation completed- Case Closed.

Source: TrackInfo Services, LLC (Environmental FirstSearch Report) 2010.

3.2.8 TRAFFIC & TRANSPORTATION

Introduction

Construction, operation and maintenance of the Proposed Action and Alternatives have the potential to impact transportation infrastructure. This section describes the transportation facilities in the study area including roads, transit facilities and airports. A Traffic Technical Study, located in Volume III, was prepared for the Proposed Action and Alternatives and contains detailed information on transportation modes, roadway traffic volumes and functionality within the affected environment.

Overview of Methodology and Analysis Area

A field survey was conducted to collect data on the characteristics (e.g., number of lanes, posted speed limit) of major area roadways that would be crossed by the Proposed Action and Alternatives (defined as study roadway segments points). Daily roadway segment count volumes were compiled from databases maintained by the City of Los Angeles and the County of Kern, and from volume summaries maintained by staff at the County of Los Angeles Department of Public Works. Daily roadway volumes at select roadways were compiled by conducting new daily roadway volume counts during the month of September 2008 over two contiguous weekdays using automatic machine counters. Information on the characteristics of Forest Service Roads in the study area, including traffic service level and objective maintenance levels (the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns), was provided by the ANF.

Planned roadway projects in the study area were identified from Transportation Improvement Plans (TIPs) from the County of Kern and the County of Los Angeles as well as the California Department of Transportation's State Transportation Improvement Plan (STIP). These projects were included in the overall impact analysis, as they have the potential to overlap with the Proposed Action and Alternatives construction period and the post-construction operations period.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

The Project study area includes several major regional transportation facilities (roadway, transit, rail, aviation) and Forest Service Roads. These facilities are described briefly below with more detailed information provided about the transportation infrastructure in the study area in the Traffic Technical Study report in Volume III.

Roadways

In order to construct and maintain the Proposed Action and Alternatives utility towers and overhead lines, use of a ground access road network would be necessary. Existing paved and unpaved highways and roads would be used where possible. The Project study area includes several public roads and highways that traverse Kern County and Los Angeles County. Major freeways in the study area include Interstates 5, 210 and 405, State Routes 14 and 58, and the Sierra Highway. Roads in cities and counties that function as arterials, collectors and local streets would also be important to provide access for construction and maintenance workers of the proposed Project.

The Project study area also includes several Forest Service roads that are generally restricted access/fire roads and designated OHV routes. The ANF has assigned an objective maintenance level and a traffic service level based on use and the improved state of the roads within the Forest. Table 3.2.8-1 describes the characteristics of Forest Service roads and other public roads that traverse ANF in the study area. Figure 3.2.8-1 shows the location of roads traversing and in proximity to the section of ANF where the proposed Alternatives are located.

TABLE 3.2.8-1. ANGELES NATIONAL FOREST ROADWAYS

Road Name	Forest Service Road	Objective Maintenance Level	Traffic Service Level
Reservoir Summit Road	7N26	2 - High clearance vehicles	D - Slow flow or may be blocked
Pyramid Lake Entrance/Parking	7N27	5 - High degree of user comfort	A - Free flowing mixed traffic
City Highline Road	6N21	2 - High clearance vehicles	B- Congested during heavy traffic
Dry Canyon Road	5N29	3 - Suitable for passenger cars	D - Slow flow or may be blocked
Lake Hughes Road	*	*	*
Liebre Gulch-Davis Ranch Road	8N01	2 - High clearance vehicles	B- Congested during heavy traffic
Old Ridge Route Road	8N04	3 - Suitable for passenger cars	B- Congested during heavy traffic
San Francisquito Motorway	5N17	2 - High clearance vehicles	B- Congested during heavy traffic
South Portal Road	7N02	2 - High clearance vehicles	B- Congested during heavy traffic
Tule Divide Fire Road	7N01	2 - High clearance vehicles	B- Congested during heavy traffic
Templin Highway	6N32	2 - High clearance vehicles	B- Congested during heavy traffic
Leona Divide Fire Road	6N04	2 - High clearance vehicles	B- Congested during heavy traffic
Drinkwater Canyon Road	5N27	2 - High clearance vehicles	D - Slow flow or may be blocked
San Francisquito Canyon Road	*	*	*
Tumble Inn Road	8N05	2 - High clearance vehicles	B- Congested during heavy traffic
Forest Inn Road	6N43	2 - High clearance vehicles	D - Slow flow or may be blocked
Vasquez Canyon Road	5N15	2 - High clearance vehicles	D - Slow flow or may be blocked

Source: Angeles National Forest 2009
NOTE:
* These roadways are public and are not maintained by ANF. They are listed here to document their presence within the Forest.
Objective Maintenance Level
1-2 = Four-wheel drive/Truck/Fire Vehicles
3-5 = Passenger Cars/Trucks/Fire Vehicles

As previously noted in Section 3.2.5 (Recreation), there are sixteen existing BLM routes in the study area. The routes are unpaved and provide motorized-vehicle access to recreation activities (including OHV use) and other uses, such as utility corridors, livestock operations, mineral extraction sites and private lands. According to the BLM West Mojave Route Designation Program, the routes in the study area are: MK0022, MK0025, MK0029, MK0040, MK0045, MK0048, MK0049, MK0050, MK0051, MK0052, MK0054, MK0081, MK0082, MK0105, MK0106, and MK0108. These routes are in Kern County generally north of the junction of SH-58 and the existing 230 kV line.

Transit and Rail Services

Transit service is limited to the more populous regions of the Project study area. Bus services are provided by Los Angeles County Metropolitan Transportation Authority (Metro) and the City of Santa Clarita Transit. Metrolink is a regional transit system that provides commuter and passenger rail service within the Southern California region. Metrolink's Antelope Valley Line operates between the city of Lancaster and Downtown Los Angeles with stops in the city of Santa Clarita and the unincorporated communities of Newhall and Sylmar. The line operates at various frequencies throughout the day, with the most service being provided during peak commuting periods (Metrolink 2009).

Union Pacific Railroad (UPRR) operates railroad tracks adjacent to Sierra Highway and then veers left just south of Oak Creek Road in unincorporated community of Mojave. The UPRR line carries freight to and from Southern California.

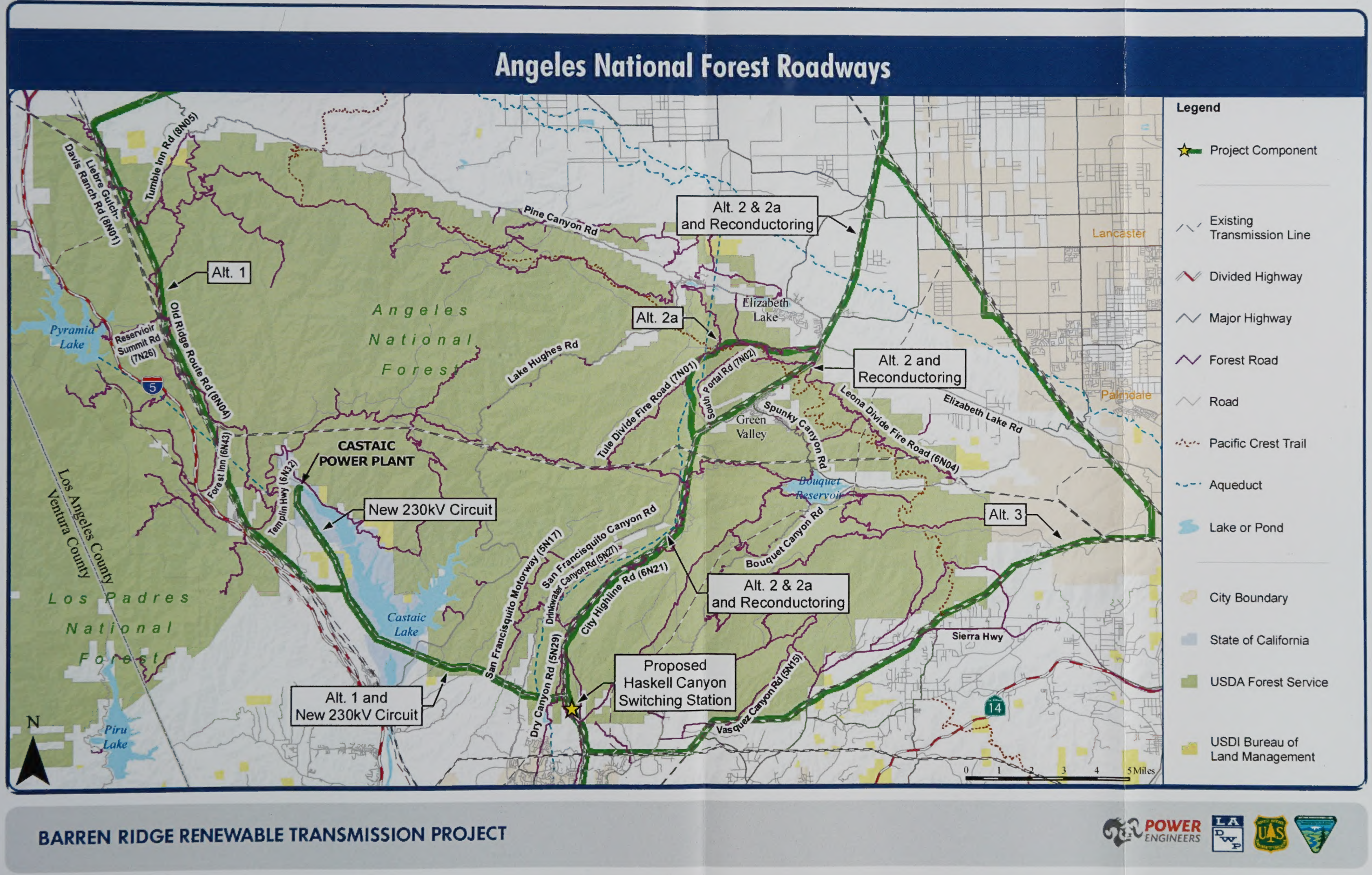
Bicycle Facilities

Designated bicycle facilities are located within the city of Santa Clarita. These include Class I (off-street) paths along Golden Valley Road and Soledad Canyon Road, and Class II (on-street) bike lanes along Bouquet Canyon Road, Copper Hill Drive, and Haskell Canyon Road.

Airport Facilities

Twenty FAA-registered air facilities within 20,000 feet of the Proposed Action and Alternatives were identified. These include both private and open-to-public facilities. Edwards Air Force Base, a major testing and evaluation center for the Department of Defense, is located to the northwest of the proposed Alternatives and spans sections of Kern and Los Angeles Counties.

FIGURE 3.2.8-1. ANGELES NATIONAL FOREST ROADWAYS


Angeles National Forest Roadways
Legend
Project Component
Existing Transmission Line
Divided Highway
Major Highway
Forest Road
Road
Pacific Crest Trail
Aqueduct
Lake or Pond
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
Alt. 1
Alt. 2a
Alt. 2 & 2a and Reconductoring
Alt. 2 and Reconductoring
Alt. 3
Alt. 1 and New 230kV Circuit
New 230kV Circuit
CASTAIC POWER PLANT
Proposed Haskell Canyon Switching Station
Angeles National Forest
Los Padres National Forest
Los Angeles County
Ventura County
Pyramid Lake
Castaic Lake
Piru Lake
Elizabeth Lake
Green Valley
Bouquet Reservoir
Lancaster
Palmdale
Tumble Inn Rd (8N05)
Liebre Gulch-Davis Ranch Rd (8N01)
Reservoir Summit Rd (7N26)
Old Ridge Route Rd (8N04)
Forest Inn (6N43)
Templin Hwy (6N32)
Pine Canyon Rd
Lake Hughes Rd
Tule Divide Fire Road (7N01)
Portal Rd (7N02)
Spunky Canyon Rd
Leona Divide Fire Road (6N04)
Elizabeth Lake Rd
San Francisquito Motorway (5N17)
San Francisquito Canyon Rd
Drinkwater Canyon Rd (5N27)
City Highline Rd (6N21)
Dry Canyon Rd (5N29)
Bouquet Canyon Rd
Vasquez Canyon Rd (5N15)
Sierra Hwy
5
14
N
0 1 2 3 4 5 Miles
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

3.2.9 VISUAL RESOURCES

Introduction

Visual resources were inventoried and are described in this section for the Proposed Action and Alternatives. The visual resources inventory describes the regional setting and landscape character, the aesthetic value of the natural and developed landscape, the public value of viewing the natural landscape, the visibility of the landscape from sensitive viewpoints (e.g., residences, recreation and preservation areas, trails, and sensitive roadways), and the agency management objectives.

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Visual Resources Technical Report, contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Visual Resources Technical Report, please refer to that report for more detailed information on Proposed Action and Alternatives effects on visual resources and the methods used to determine those effects.

Overview

Visual resources were inventoried within the study corridor centered along the route of the new 230 kV double circuit transmission line for each action Alternative. A six-mile wide study corridor (three miles on each side of the centerline of each route) was studied for visual resources. Within the Angeles National Forest (ANF), the visual resources study corridor was expanded to a 10-mile wide study corridor (five miles on each side of the centerline for each route) to account for viewer sensitivity analysis and visibility analysis.

The study has been conducted in compliance with the USFS Scenery Management System (SMS) (USFS 1995) and the BLM Visual Resource Management (VRM) Inventory and Contrast Rating System (BLM 1986a and b). The methodology used for the visual resource analysis utilizes the components of the SMS that the ANF has cataloged to develop their Scenic Integrity Objectives (SIOs), and also uses an alternative methodology consistent with the BLM VRM on other public and private lands in order to compare end-to-end routes. The SMS inventory components of scenic attractiveness, sensitive viewpoints (Travelways and Use Areas and Concern Levels), seen areas, and distance zones have been inventoried for all lands within the study area. The visual effects of the Project on the ANF only considers compliance with the established SIOs. The inventory elements of the SMS are used in an analysis process to identify visual impact levels in 0.1 mile increments for all Alternatives.

Because transmission projects are linear in nature, they typically cross multiple jurisdictions and land uses, and that is the case with the BRRTP. There are no formal guidelines for managing visual resources for private, State or county-owned lands found within the study area. Therefore, the methodology used in this study for these lands integrates the BLM VRM system on private lands, but is modified to better address culturally dominated landscapes outside of public lands administered by the USFS or BLM.

The visual resources inventory consisted of the following steps:

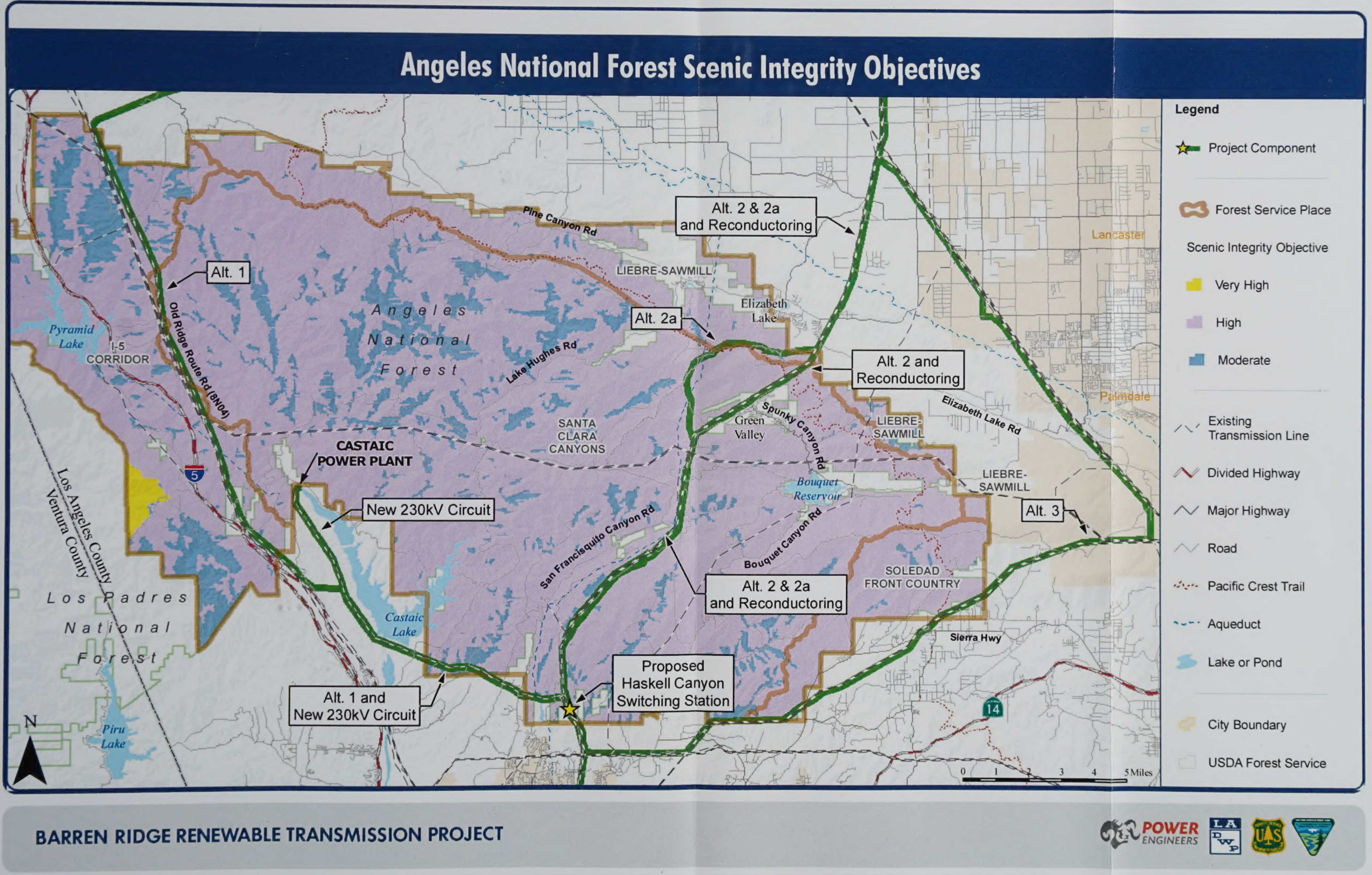
- A review of the regional physiography, landscape setting, landscape character, and an inventory of existing regional landform, vegetation and water features
- Mapping of BLM Scenic Quality and VRM classes, high sensitivity viewpoints, and visibility and distance zones
- Mapping of ANF SIOs, Places, and viewpoints of high concern, and visibility and distance zones
- Scenic attractiveness classifications were developed for private lands and other lands not managed by BLM or ANF

Visual resource data was obtained from a regional study conducted by POWER in 2007. Additionally, visual resource data was collected from agency publications, agency websites, GIS data sets, aerial photography, field reconnaissance and agency contacts. This data included ANF information relative to SMS components, such as Places mapping, SIO mapping, viewpoints of high concern, seen areas and scenic attractiveness mapping. The data collected from the BLM Ridgecrest Field Office included VRM Classes, BLM-identified sensitive viewpoints, and other potentially sensitive viewpoint locations. Additional visual resource support was received from the agencies through conversations, meetings, and other correspondence.

Existing scenic attractiveness mapping for the Proposed Action and Alternatives was obtained from the USFS and used in the scenic attractiveness inventory, although scenic attractiveness impacts were not assessed because the effect on scenic attractiveness is captured with the SIO compatibility analysis. Scenic quality class mapping was not available from the BLM Ridgecrest Field Office, but was developed using VRM scenic quality criteria and rating. Scenic attractiveness was also developed for private lands and other lands not managed by the BLM or USFS by rating homogeneous landscape rating units using similar criteria to the BLM's VRM.

Sensitive viewpoints or Key Observation Points were identified through an analysis of viewer sensitivity and consultation with agency resource managers, land use mapping, and field investigation. Concern levels for viewpoints on the ANF were identified by the ANF. Visibility from sensitive viewpoints was mapped using GIS and digital terrain data from the United States Geological Service (USGS) and the sensitive viewpoints mapped for this analysis. Visibility of the Proposed Action and action Alternatives from viewpoints of high concern and other sensitive viewpoints is referred to as Seen Areas in the USFS SMS and as mapping distance zones in the BLM VRM methodology.

FIGURE 3.2.9-1. ANGELES NATIONAL FOREST SCENIC INTEGRITY OBJECTIVES


Angeles National Forest Scenic Integrity Objectives
Legend
Project Component
Forest Service Place
Scenic Integrity Objective
Very High
High
Moderate
Existing Transmission Line
Divided Highway
Major Highway
Road
Pacific Crest Trail
Aqueduct
Lake or Pond
City Boundary
USDA Forest Service
Alt. 2 & 2a and Reconductoring
Alt. 1
Alt. 2a
Alt. 2 and Reconductoring
Alt. 3
New 230kV Circuit
Alt. 1 and New 230kV Circuit
Proposed Haskell Canyon Switching Station
CASTAIC POWER PLANT
Angeles National Forest
Los Padres National Forest
Pine Canyon Rd
LIEBRE-SAWMILL
Elizabeth Lake
Lake Hughes Rd
Old Ridge Route Rd (8N04)
Pyramid Lake
I-5 CORRIDOR
SANTA CLARA CANYONS
Green Valley
Spunky Canyon Rd
Elizabeth Lake Rd
Bouquet Reservoir
Bouquet Canyon Rd
San Francisquito Canyon Rd
SOLEDAD FRONT COUNTRY
Sierra Hwy
Los Angeles County
Ventura County
Castaic Lake
Piru Lake
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ANF Scenic Integrity Objectives

The ANF SIOs are formed by combining scenic attractiveness mapping with the visibility and distance from viewpoints of high concern. Although not adopted for all National Forest System lands nationwide, visual resources on ANF lands are managed under the SMS. The SMS establishes a framework for managing the aesthetics of National Forest System landscapes. SIOs are established on ANF lands, and are described in the Visual Resources Technical Report Appendix A.

Scenic Integrity Objectives are designated and mapped for the ANF. These objectives define the goals for managing the aesthetics of the ANF, define acceptable degrees of landscape change, and form the basis for assessing visual impacts on the ANF. The Project's resulting Scenic Integrity was estimated to determine conformance with the ANF Land Management Plan and level of SIO compliance (or "underachievement").

BLM Visual Resource Management

Visual resources on BLM lands are managed under the VRM system. The BLM has four VRM Classes to manage visual resources on public lands. As with the USFS SMS system, the BLM utilizes the VRM system to establish standards on managed lands that allow for various levels of change as typically detailed in the agency Resource Management Plans or Management Framework Plans.

BLM VRM Classes are designated for most of the public lands managed by the BLM in the study corridors. These objectives define the acceptable degree of visual change allowed in the natural landscape. The BLM derive visual resource management (VRM) classes for their lands by combining scenic quality, visual sensitivity, and visibility and distance zones from sensitive viewpoints. For a description of VRM class designations refer to the Visual Resources Technical Report Appendix A.

Regional Setting and Landscape Character

The scenic value analysis of the landscape began by examining the physiography and cultural modifications of the region. Physiography, also referred to as geomorphology, is the classification of major landforms according to their geologic structures and histories into three tiers: divisions, provinces and sections. Patterns of cultural modification (i.e., land uses) were identified and categorized from field observation and aerial photography. The regional setting of the study area was analyzed to classify, describe, and illustrate the regional landform, vegetation and water features, and to break the landscape outside of the ANF into units for evaluation of scenic attractiveness.

Dominant landforms, topography, and vegetation cover were identified and categorized from field observation, topographic maps, and aerial photography, and compared to physiographic regions detailed by *Physiography of the Western United States* (Fenneman 1931) and ecological subsections in Ecological Subregions of California (USFS Pacific Southwest Region *n.d.*).

General landform feature types (e.g., mountains, canyons), referred to as landform types, were identified and categorized for areas crossed by the Alternative routes. Each landform type was further divided into smaller units of similar physiographic, visual, and cultural characteristics. These homogeneous landscape units, or scenic attractiveness rating units, were evaluated for scenic attractiveness using BLM criteria. This was done for all lands not inventoried for visual resources, including the private lands and some of the public lands managed by the BLM. The ANF provided all visual inventory data and mapping.

The ANF Land Management Plan divides the forest into a series of geographical units called "Places" (see Section 3.2.3, Land Use), which each have their own landscape character. The ANF defines "landscape character" as an overall visual and cultural impression of landscape attributes, the physical appearance and cultural context of a landscape that gives it an identity and "sense of place." Each of these Places has a theme, which refers to images of the landscape that can be defined with a brief set of physical, visual or cultural attributes that encapsulate the sense of place; a setting, which provides a description of the landscape character of the place; a desired condition, which describes what the Place could be as the national forest implements activities to move toward the overall forest-wide desired conditions; and a Program Emphasis, which identifies priority activities the national forest would emphasize in the next three to five years.

Scenic Attractiveness

USFS SMS and BLM VRM use slightly different procedures to establish scenic quality or scenic attractiveness levels. The SMS used on the ANF describes scenic attractiveness in terms of landform, vegetation, and water to determine scenic attractiveness classes, while the BLM uses a numerical rating system to determine scenic quality classes and ratings. Both systems classify the landscape into three levels of scenic attractiveness/scenic quality: Class A, Class B, and Class C. Appendix A of the Visual Resources Technical Report documents the definitions of the USFS SMS's scenic attractiveness with the BLM's scenic quality classes.

Landform, water, color, influence of adjacent scenery, scarcity of features, and cultural modifications are key elements used in the BLM system for rating scenic quality, and were observed and documented based on the criteria outlined Appendix A of the Visual Resources Technical Report. Vegetation cover, exposed soil color, and any atypical features, such as an abundance of rock outcroppings or unique water features, were also observed and noted. These features were evaluated in terms of contributing to or minimizing the scenic attractiveness of the landscape. The sum of the numeric values for these elements determines the scenic attractiveness class.

With the exception of developed landscapes, the evaluation of scenic attractiveness performed for private land for the BRRTP visual resource study utilizes an approach consistent with agency visual resource inventory procedures. Because agricultural, urban, and developed lands are not addressed by the USFS or BLM systems, these areas were evaluated using scenic attractiveness criteria developed for the Proposed Action and Alternatives. The visual quality criteria are most similar to the BLM criteria, but modified to address culturally dominated landscapes (e.g., communities, agricultural lands, development). The visual quality system was only applied to private lands and lands not managed by the BLM or the ANF. Further details on this methodology and the VRM system can be found in the Visual Resources Technical Report Appendix A.

There are three classes of scenic attractiveness that resulted from field rating landscape areas for diversity and intactness. These classes are the following:

> Class A – Distinctive: Areas where characteristic features of landform, rock, water and vegetation are distinctive or unique in the context of the surrounding areas. These features exhibit considerable variety in form, line, color and texture and have strong positive attributes of unity and intactness.
>
> Class B – Above Average: Areas in which features provide variety in form, line, color and texture. Although the combinations are not rare in the surrounding region, they provide sufficient visual diversity to be considered moderately distinctive. These features exhibit more common variety in form, line, color and texture and have positive, but more common, attributes of unity and intactness.
>
> Class C – Common: Areas where characteristic features have moderate to little variety in form, line, color and texture in relation to the surrounding region.

After rating the private lands and other lands not previously inventoried, the following summarizes scenic quality / scenic attractiveness for the Project corridors:

> Class A scenery is located in the Sierra Pelona Mountains; Castaic Lake, Elizabeth Lake, and Bouquet Reservoir; at Elizabeth Lake Canyon, San Francisquito Canyon, and Bouquet Canyon; and at Vasquez Rocks.
>
> Class B scenery is the dominant classification within the ANF. The majority of the Sierra Pelona Mountains within the visual resources study corridor is composed of Class B scenery. Class B scenery also included Portal Ridge, the Antelope Valley California Poppy Reserve area, portions of the Santa Susana Mountains, and the Placerita Canyon area.
>
> Class C scenery is the dominant classification within the study corridor, with the exception of ANF lands. Included are developed areas, valleys, foothills, and indistinct mountainous areas. These landscapes lack unique or distinctive features and are common within the context of the physiographic region (as previously described).

Refer to the Visual Resources Technical Report Appendix F for scenic attractiveness / scenic quality mapping for the Alternative route corridors.

Sensitive Viewers

Specific criteria were used to identify potentially sensitive viewpoints that could be impacted by the Proposed Action and Alternatives. Sensitive viewpoints, referred to viewpoints of high concern in the SMS and as Key Observation Points in the BLM VRM methodology, were identified through consultation with agency contacts, agency websites, land use data, and field investigation.

Viewpoints on private lands and public lands managed by the BLM include:

- Residences.
- Parks, recreation, and preservation areas – existing and proposed developed recreation sites, parks, or areas used for camping, picnicking or other recreational activities.
- Sensitive Travel routes – Proposed or designated scenic or historic highways or byways and recreation destination routes.
- Sites listed on the National Register of Historic Places.

For viewpoints on the ANF, visual sensitivity was evaluated and rated as high, moderate, or low, following BLM criteria. The viewpoints of high concern were obtained from the ANF, and are listed below:

- Scenic Highways including I-15, Ridge Route Road, Lake Hughes Road, Elizabeth Lake Road, San Francisquito Canyon Road, Bouquet Canyon Road, Spunky Canyon Road
- Pacific Crest National Scenic Trail
- Wild and Scenic River Study Areas including Piru Creek Wild River segment and Piru Creek Recreation River segment; the San Francisquito Creek Recreation River is considered a *Moderate* Concern
- Placerita Canyon State Park/Nature Center Trails that extend into the ANF
- Sespe Wilderness
- Non-OHV Forest Service Trailheads identified in the ANF Atlas, including San Francisquito Canyon Trailhead and a Pacific Crest National Scenic Trail Trailhead
- Forest Service Points of Interest and Vista Locations identified in the ANF Atlas, including two unnamed Points of Interest located at Warm Springs Canyon and Soledad Canyon, and Templin Vista Point
- Forest Service Campgrounds identified in the ANF Atlas, including Bear Campground, Blue Point Campground (Los Padres National Forest [LPNF]), Cottonwood Campground, Green Valley Camp Site, Hardluck Camp Ground (LPNF), Los Alamos Campground, Oak Flat Campground, Spunky Campground, Streamside Campground, Upper Shake Campground, Zuni Campground, Los Alamos Group Campground, Ellis Apiary Camp Site (LPNF), Horse Trail Camp Site, Log Cabin Camp Site (LPNF), and Maxwell Camp Site
- Forest Service Picnic Areas identified in the ANF Atlas, including Elizabeth Lake Picnic Area, Emigrant Landing Picnic Area, Los Cantiles Picnic Area, Live Oak Picnic Area (LPNF), Serrano Picnic Area, Tin Cup Picnic Area, Vaquero Picnic Area, Vista del Lago Picnic Area, and Yellow Bar Picnic Area
- Forest Service Occupied Facilities, including Green Valley Facility, Los Alamos Fire Station, Oak Flat Fire Station, San Francisquito Fire Station, Texas Canyon Fire Station, and Santa Clara/Mojave Rivers Ranger District Office
- Pyramid Lake Visitor’s Center

- St. Francis Dam Site State Historic Place
- Bouquet Canyon Recreation Residence Corridor

Additional information about viewpoints is listed in the Visual Resources Technical Report Appendix A, Table 8. Potential visual impacts to National Historic Landmarks, National Register historic districts and sites, and sites nominated to or designated by the State Historic Preservation Office (SHPO) are addressed in the Cultural Resources Technical Report and summarized in Section 3.2.10 of this Chapter.

Visual Sensitivity

Visual sensitivity is defined for this project analysis as a measure of viewer concern for the scenic resource and potential changes to the resource. The USFS SMS refers to this measurement as "concern levels" and defines it as a measure of the degree of public importance placed on landscapes viewed from travelways and use areas (USFS 1995). Viewpoints of high concern on the ANF were determined by the ANF landscape architect. Concern levels are a measure of degree of public importance placed on landscapes viewed from travelways and use areas. Concern levels are divided into three levels: 1 (high), 2 (moderate), and 3 (low). Concern levels are a component of Landscape Visibility as defined by the SMS. Landscape visibility is a function of many interconnected considerations, but consist of three main elements:

1) Travelways and Use Areas,
2) Concern Levels, and
3) Distance Zones.

The criteria used for the analysis for private lands and public lands managed by the BLM were user type/attitude, duration of view, and use volume:

> **User type/attitude** considers the local, regional or national significance or importance of a viewpoint or viewed area. As an example, national park or wilderness area viewpoints are typically considered more sensitive than interstate highway viewpoints.
>
> **Duration of view** is defined as the length of time that a sensitive viewer would typically encounter a particular view. For example, a view from a residence is considered to be a high duration view because the landscape could be viewed at any time of day and for any length of time. Alternatively, the amount of time a commuter would see an area of landscape from a highway as they drive through the area would be very short, and thus would be considered a short duration view.
>
> **Use volume** considers the number of users. As an example, a busy arterial road would have a higher volume of users than a small local street.

The combination of user type / attitude, use volume, and duration of view produced an overall sensitivity level of high, moderate, or low that was subsequently used in the visual analysis and initial impact level determination. See Table A-8 in Appendix A of the Visual Resources Technical Report for a complete list of viewpoints and sensitivity levels, including those levels already established by the ANF. In this study, potential visual impacts were assessed for high sensitivity viewpoints for private lands and public lands managed by the BLM, and compliance was determined for the established SIOs from viewpoints of high concern on the ANF.

Residences make up the majority of the high sensitivity viewpoints in the study corridors. Residences are concentrated in the communities within the study area, including the cities of Los Angeles, California City, San Fernando, Santa Clarita, Palmdale, and Lancaster, and the unincorporated communities of Mojave, Agua Dulce, Antelope Acres, Castaic, Green Valley, Elizabeth Lake, and Quartz Hill. Additional residences are dispersed throughout the corridors.

High sensitivity recreation viewpoints or recreation and preservation viewpoints of high concern (ANF) in the study corridors include the Antelope Valley California Poppy Reserve; Mountains, Recreation and Conservation Authority (MRCA) areas, including Ritter Ranch, Whitney Canyon Park and Santa Clarita Woodlands Park; the Pacific Crest National Scenic Trail; the Sespe Wilderness; Placerita Canyon State Park/Nature Center; non-OHV forest service trailheads; and ANF points of interest/vista locations, campgrounds, and picnic areas. Cultural viewpoints that were included in the analysis as high sensitivity viewpoints included the St. Francis dam site, Old Ridge Road, and the Vasquez Rocks Natural Area and Nature Center. Veluzat (Melody) Motion Picture Ranch was also included as a high sensitivity viewpoint because its use as a filming location is based on a natural-appearing environment.

Highly sensitive travel routes (or travelways of high concern on the ANF) included State-identified eligible scenic highways, Los Angeles County-identified First Priority Scenic Highways (not adopted), Los Angeles County-identified Second Priority Scenic Highways (not adopted), City of Palmdale General Plan-identified "Antelope Valley Scenic Highways," City of Los Angeles General Plan-identified Scenic Highways, Old Ridge Road (National Register Site), and other roadways identified by ANF personnel as viewpoints of high concern.

Visibility and Distance Zones

Visibility from sensitive viewpoints was generated by POWER's GIS analysts using digital terrain data from the USGS and the sensitive viewpoints mapped for this study. Viewsheds from high concern viewpoints were obtained from the ANF to determine Project visibility and resulting SI. Visibility is referred to as Seen Areas in the USFS SMS and as mapping Distance Zones in the BLM VRM methodology.

Landscape visibility was mapped from the centerline of each Alternative corridor using a 195-foot uniform height. The 195-foot height represents the maximum tower height that may be used, and the resulting visible area is somewhat exaggerated from the visibility conditions that would result from construction of the Proposed Action or Alternatives, but is done in an effort to capture the worst-case scenario. Typical tower height for the Project is expected to be approximately 140 feet.

Distance zones for both the VRM and SMS establish visual perception thresholds of detail in the landscape. The perception of form, line, color, texture, and other visual elements in the landscape changes with increasing distance from a viewpoint. Landscape elements tend to become less obvious and detailed. Elements of form and line become more dominant than color or texture at longer viewing distances.

For this Project, a review of previous studies and environmental review documents for transmission projects in similar geographical, topographical, and environmental settings was performed, and relevant visibility thresholds were established. Distance zones identified for the Proposed Action and Alternatives for private lands and public lands managed by the BLM are as follows:

- **Immediate Foreground**: 0 feet to 500 feet
- **Foreground**: 500 feet to 0.5 mile
- **Middleground**: 0.5 mile to 3 miles
- **Background**: Beyond 3 miles

The distance zones used for the visual analysis of the alternatives on the ANF were slightly different:

- **Immediate Foreground**: 0 feet to 300 feet
- **Foreground**: 300 feet to 0.5 mile
- **Middleground**: 0.5 mile to 4 miles
- **Background**: Beyond 4 miles
- **Seldom-Seen Areas:** Not seen from travelways or use areas

Immediate foreground, foreground, and middleground visibility was mapped for all identified sensitive viewpoints (on private and BLM lands) located within the six-mile-wide visual resources corridor. Visibility was also mapped based on data obtained from the USFS for identified sensitive viewpoints within the ANF that are located up to eight miles from the centerline of each Alternative route, where background views may occur.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

The addition of the new 230 kV circuit within the ROW would include only stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant. High or moderate SIOs are established for all ANF-managed lands crossed.

The majority of the areas that would be crossed are composed of Class B scenery. Class A scenery would be crossed in the Castaic Lake area.

One residence would have immediate foreground views of the Alternative.

San Francisquito Canyon Road, identified by the ANF as sensitive, would be crossed. Ridge Route Road, a First Priority County Scenic Highway, would be located in the foreground distance zone. Lake Hughes Road, a Second Priority County Scenic Highway, would be located in the foreground distance zone. I-5, a Second Priority County Scenic Highway, would be located within the middleground distance zone.

Reconductoring of BR-RIN Transmission Line

The existing transmission conductor would be removed and a new conductor would be installed. Some of the transmission line structures would need to be modified or replaced, and/or foundations reinforced, to carry the additional weight of the new heavier conductor. High SIOs are established for all ANF-managed lands crossed.

The majority of the areas crossed are composed of Class C scenery. Class A scenery would be crossed just southeast of the Pacific Crest National Scenic Trail crossing. All other areas from the California Aqueduct south to the proposed Haskell Canyon Switching Station site, with the exception of an area of private land around the Johnson Road crossing, are composed of Class B scenery.

A total of 870 residences would have immediate foreground views of the reconductoring.

The Pacific Crest National Scenic Trail would be crossed in a mountainous, natural area near San Francisquito Canyon Road. The trail would have immediate foreground, foreground and middleground views of the reconductoring. The San Francisquito Creek (Wild and Scenic River) would have immediate foreground, foreground, and middleground views of the Alternative. Trails within the MRCA Whitney Canyon Park would be crossed by the Alternative. The ANF Green Valley Camp Site would also be located within the immediate foreground distance zone. Veluzat Motion Picture Ranch would be located in the foreground distance zone. The Antelope Valley California Poppy Reserve and the ANF Elizabeth Lake Picnic Area would be located within the corridor in the middleground distance zone. Trails within the Placerita Canyon State Park would be located in the middleground distance zone. Trails within the MRCA Santa Clarita Woodlands Park would be located in the middleground distance zone.

Elizabeth Lake Road, a First Priority County Scenic Highway and a Palmdale Scenic Highway; and San Francisquito Canyon Road, identified by the ANF as a sensitive road, would be crossed and would have immediate foreground, foreground, and middleground views. I-210, a City of Los Angeles Scenic Road, would also be crossed. Fairmont-Neenach Road and Johnson Road, both Second Priority County Scenic Highways, would also be crossed and would have immediate foreground, foreground, and middleground views. Lancaster Road, Munz Ranch Road, and 120th Street West, all Second Priority County Scenic Highways, would be located within the foreground distance zone. State Hwy 14, an Eligible State Scenic Highway; West Avenue I; 110th Street West; and West Avenue K, all Second Priority County Scenic Highways, would be located within the middleground distance zone. Lake Hughes Road, a Second Priority County Scenic Highway, would be located within the middleground distance zone and also within the background distance zone on ANF lands. Rinaldi Street, a City of Los Angeles Scenic Road, would be located in the foreground distance zone. South Brand Boulevard and Sepulveda Boulevard, both City of Los Angeles Scenic Roads, would be located in the middleground distance zone.

New Haskell Canyon Switching Station

The proposed new Haskell Canyon Switching Station would be located in an area of Class B Scenery. Residences located southwest of the switching station site would have middleground views. The Veluzat Motion Picture Ranch would also have middleground views.

Expansion of Barren Ridge Switching Station

The expansion area of the Barren Ridge Switching Station would be located in an area of Class C Scenery. State Highway 14, an Eligible State Scenic Highway, would be located in the foreground distance zone.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below. The inventory results for the new transmission line for each action Alternative are summarized in Table 3.2.9-1 and the text below.

TABLE 3.2.9-1. VISUAL RESOURCES INVENTORY SUMMARY

		Alternative 1 Transmission Line	Alternative 2 Transmission Line	Alternative 2a Transmission Line	Alternative 3 Transmission Line
Total Length of Transmission Line		83.1	60.7	62.5	75.5
Number of Residences within Immediate Foreground (500 feet)		29	63	32	23
ANF SIO (Miles Crossed)	High	16.3	14.8	16.0	3.8
	Moderate	2.0	0.0	0.0	1.0
BLM VRM (Miles Crossed)	None Established	4.9	4.9	4.9	4.9
Scenic Attractiveness (Miles Crossed, private/BLM)	Class A	1.1	0.0	0	0
	Class B	9.7	2.5	2.1	10.5
	Class C	56.3	45.0	45.0	60.7
Miles of Visibility Residences	Immediate Foreground	5.6	5.8	3.3	6.3
	Foreground	16.6	14.5	13.0	278.1

			Alternative 1 Transmission Line	Alternative 2 Transmission Line	Alternative 2a Transmission Line	Alternative 3 Transmission Line
		Middleground	47.0	34.7	39.0	38.0
	Recreation and Preservation Viewpoints (Private/BLM)	Immediate Foreground	6.8	0.4	0.0	1.8
		Foreground	8.0	0.5	0.5	3.8
		Middleground	14.6	4.2	4.2	8.0
	Transportation Viewpoints (Private/BLM)	Immediate Foreground	6.7	2.1	1.2	1.4
		Foreground	6.5	2.8	2.9	6.7
		Middleground	24.3	22.3	22.7	36.1

Alternative 1

The new 230 kV double-circuit transmission line in Alternative 1 is the longest transmission line of the action Alternatives (83.1 miles). This transmission line would cross 18.3 miles of ANF High and Moderate SIO areas, would cross a total of 10.8 miles of Class A and Class B landscapes, and would have the greatest distances of immediate foreground and foreground visibility for sensitive recreation, preservation, and transportation viewpoints (non-ANF lands). The Alternative 1 transmission line would be within 500 feet of 29 residences (i.e., immediate foreground of residences for 5.6 miles). Refer to Table 3.2.9-1 for a summary of the visual resource inventory for new transmission line component for each action Alternative.

SIO Classes

High or moderate SIOs are established for all ANF-managed lands crossed by the Alternative 1 transmission line. It would cross the greatest distance of High and Moderate SIOs among the Alternatives (16.3 miles of High SIO).

VRM Classes

No VRM classes are established on the public lands managed by the BLM (4.9 miles).

Regional Setting and Landscape Character

From north to south, the Alternative 1 transmission line would pass through the Sierra Nevada Section of the Cascade-Sierra Mountains Province, the Great Basin Section of the Basin and Range Province, and the Los Angeles Ranges Section of the Pacific Border Province.

Within the ANF, the transmission line would pass through the I-5 Corridor Place and the Santa Clara Canyons Place. The I-5 Corridor Place setting is a designated utility corridor for electricity, fiber optics, natural gas, and crude oil. The Desired Condition of the I-5 Corridor Place is to maintain the landscape as natural appearing and one that functions as a scenic transportation gateway for visitors to Southern California and a corridor for utilities and water. The valued landscape attributes to be preserved over time are dramatic natural appearing canyon and rugged mountain views from the interstate, the presence of coast live oaks along shaded slopes and canyons, and a well-defined age class mosaic in chaparral.

Cultural modifications found throughout the study corridor for the Alternative 1 transmission line include the cities of California City, and Santa Clarita; the unincorporated communities of Mojave, Holiday Valley Estates and Castaic; dispersed rural residences and agricultural uses; and numerous highways and other roads.

Scenic Attractiveness

On private and BLM lands, the majority of the areas that would be crossed by the Alternative 1 transmission line are composed of Class C scenery, although it would cross the greatest distance of Class A and Class B scenery among the Alternatives. The Class A scenery that would be crossed by the Alternative 1 transmission line occurs in the Castaic Lake area. All other areas from Lancaster Road south to the proposed Haskell Canyon Switching Station site, with the exception of an area of private land outside the ANF in the San Francisquito Canyon Road Area, are composed of Class B scenery.

Sensitive Viewpoints and Visibility

Residences

A total of 29 residences would have immediate foreground views of the Alternative 1 transmission line. It would have a total of 22.2 miles within foreground views of residences.

Recreation and Preservation Viewpoints

The Alternative 1 transmission line would be the most visible transmission line among the Alternatives in all distance zones for recreation and preservation viewpoints. The total distance of immediate foreground visibility would be 6.8 miles, substantially more than for the transmission lines of the other Alternatives.

The new transmission line for all action Alternatives would cross the Pacific Crest National Scenic Trail. The Alternative 1 transmission line would cross it in a residential area near roadways, and would parallel and remain in close vicinity to the trail for several miles. The trail would have immediate foreground, foreground and middleground views of the Alternative. On the ANF, the Serrano, Vaquero, and Emigrant Landing picnic areas, Oak Flat Camp Ground, Templin Vista, Sespe Wilderness Area, and Creek Recreation River would all be located within the middleground distance zone. Although still being covered in the analysis, a sensitive viewpoint for San Francisquito Creek, eligible as a Wild and Scenic River, was not established by the ANF because the Outstandingly Remarkable Values are neither for Scenery nor Recreation, and public access to the Creek is very limited.

Transportation Viewpoints
The Alternative 1 transmission line would have the greatest distance of immediate foreground and foreground visibility (13.2 miles), and would be substantially more visible than the new transmission line of the other Alternatives.

The Ridge Route Road, a First Priority County Scenic Highway, would be crossed multiple times by the Alternative 1 transmission line. San Francisquito Canyon Road, identified by the ANF as a viewpoint of high concern, would also be crossed by the Alternative 1 transmission line. Lancaster Road, a Second Priority County Scenic Highway, would be in the immediate foreground distance zone. Lake Hughes Road, a Second Priority County Scenic Highway, would be located in the foreground distance zone. State Hwy 14, an Eligible State Scenic Highway; Pine Canyon Road, a First Priority County Scenic Highway; and I-5 and Three Points Road, both Second Priority County Scenic Highways, would all be located within the middleground distance zone.

Alternative 2

The Alternative 2 transmission line, would be the shortest (60.7 miles) transmission line of the four action Alternatives. The greatest number of residences within the immediate foreground distance zone would occur along this Alternative. Refer to Table 3.2.9-1 for a summary of the visual resource inventory for new transmission line component for each action Alternative.

SIO Classes

High SIOs are established for all ANF-managed lands crossed by the Alternative 2 transmission line (14.8 miles). The Alternative 2 transmission line would cross a shorter distance of High SIOs than the Alternative 1 transmission line but a substantially greater distance than the Alternative 3 transmission line.

VRM Classes

No VRM classes are established on the public lands managed by the BLM (4.9 miles).

Regional Setting and Landscape Character

From north to south, the Alternative 2 transmission line would pass through the Sierra Nevada Section of the Cascade-Sierra Mountains Province, the Sonoran Desert Section of the Basin and Range Province, and the Los Angeles Ranges Section of the Pacific Border Province.

Within the ANF, the Alternative 2 transmission line would pass through the Liebre-Sawmill Place and the Santa Clara Canyons Place. The Liebre-Sawmill Place setting rises up from the Mojave Desert at elevations from approximately 3,500 feet up to 5,500 feet, reflecting a transition from the desert floor to the forest. This area is generally accessed from major entries along California State Highway 138 and County Road N2. The paths through this landscape lead visitors to dramatic desert panoramas and rugged fault-zone background views. The Desired Condition focuses on its value as a desert-interface landscape, and it is identified as a "key place" for the attractiveness of its landscape and is maintained as a natural appearing landscape that functions as year-round open space for Los Angeles and Antelope Valley residents. The valued landscape attributes to be preserved over time are the dramatic desert panoramas and rugged fault-zone background views, the marked transition of plant communities from desert to mixed sage, black oak, pine and juniper at higher elevations, visitor access to free-flowing water in drainages, and the undeveloped appearance of the landscape showing little visible human influence on the natural setting.

The Santa Clara Canyons Place setting rises up from the Santa Clara River Basin at elevations starting at about 1,200 feet and reaching up to 5,000 feet. This area is generally accessed from major portals along the Interstate 5, Interstate 14, and California State Highway 138 travel corridors. The paths through this landscape lead visitors to dramatic canyon panoramas and rugged mountain background views. The Desired Condition relates to the natural appearing and pastoral landscape that functions as a remote Back Country open space. The valued landscape attributes to be preserved over time are the dramatic canyon panoramas and rugged mountain background views, oak woodlands, a well-defined age class mosaic in chaparral, and the pastoral qualities of grazing activities, which is important to the interpretation to the examples of important Native American history and historic mining.

Cultural modifications (i.e., communities and other land uses) are found throughout the study corridor and include the cities of California City, and Santa Clarita; the unincorporated communities of Mojave, Antelope Acres, Elizabeth Lake, and Green Valley; dispersed rural residences, agricultural facilities and cultivated croplands; and numerous highways and other roads.

Scenic Attractiveness

On private and BLM lands, the majority of the areas that would be crossed by the Alternative 2 transmission line are composed of Class C scenery. The Alternative 2 transmission line would cross a shorter distance of Class A and Class B scenery than the Alternative 1 transmission line but a greater distance than the Alternative 3 transmission line. The Class A scenery that would be crossed by the transmission line in other Alternatives would occur just southeast of the Pacific Crest National Scenic Trail crossing on the ANF. All other areas from the California Aqueduct south to the proposed Haskell Canyon Switching Station site, with the exception of an area of private land around the Johnson Road crossing ,would be Class B scenery.

Sensitive Viewpoints and Visibility

A total of 63 residences would be within 500 feet of the Alternative 2 transmission line. The majority of these residences are located in the unincorporated community of Green Valley and in an area north of Johnson Road. The Alternative 2 transmission line would have a total of 20.4 miles within foreground views of residences.

The distance of immediate foreground visibility outside of the ANF for the Alternative 2 transmission line from all high sensitivity viewpoints would be 0.4 mile, and an additional 0.5 mile of foreground visibility. The Pacific Crest National Scenic Trail on the ANF would be crossed in a mountainous, natural area near San Francisquito Canyon Road, and would have immediate foreground, foreground and middleground views of the Alternative 2 transmission line. The ANF Green Valley Camp Site would also be located within the immediate foreground distance zone. The Antelope Valley California Poppy Reserve and the ANF Elizabeth Lake Picnic Area would be located along the alignment in the middleground distance zone.

The Alternative 2 transmission line would be visible for 2.1 miles within the immediate foreground and an additional 2.8 miles within the foreground distance zone for high sensitivity transportation viewpoints off of the ANF.

Elizabeth Lake Road, a First Priority County Scenic Highway and a Palmdale Scenic Highway, and San Francisquito Canyon Road, identified by the ANF as a road of high concern, would be crossed by the Alternative 2 transmission line and would have immediate foreground, foreground, and middleground views of the transmission line. Fairmont-Neenach Road and Johnson Road, both Second Priority County Scenic Highways, would also be crossed and would have immediate foreground, foreground, and middleground views of the transmission line. Lancaster Road, Munz Ranch Road, and 120th Street West, all Second Priority County Scenic Highways, would be located within the foreground distance zone. State Hwy 14, an Eligible State Scenic Highway; West Avenue I, 110th Street West, and West Avenue K, all Second Priority County Scenic Highways, would be located within the middleground distance zone. Lake Hughes Road, a Second Priority County Scenic Highway, would be located within the middleground and background distance zones on the ANF.

Alternative 2a

The Alternative 2a transmission line would be 62.5 miles in length, and would have 32 residences within 500 feet. It would additionally have 16.3 miles within the foreground and immediate foreground distance zones from residences. Refer to Table 3.2.9-1 for a summary of the visual resource inventory for new transmission line component for each action Alternative.

SIO Classes

High SIOs are established for all ANF-managed lands crossed by the Alternative 2a transmission line. It would cross the second greatest distance of High SIOs of the Alternatives.

VRM Classes

No VRM classes are established on the public lands managed by the BLM (4.9 miles).

Regional Setting and Landscape Character

The localized Green Valley Re-route portion of the Alternative 2a transmission line would pass through a mountainous, undeveloped area of the ANF. This portion of the transmission line would pass through the Sonoran Desert Section of the Basin and Range Province and the Los Angeles Ranges Section of the Pacific Border Province. Within the ANF, the Alternative 2a transmission line would pass through the Liebre-Sawmill Place and the Santa Clara Canyons Place. The Liebre-Sawmill Place is valued as a desert-interface landscape and is identified as a "Key Place" for the attractiveness of its landscape, and is maintained as a natural appearing landscape that functions as year-round open space for Los Angeles and Antelope Valley residents. The Santa Clara Canyons Place is identified as a "Key Place" for its natural appearing and pastoral landscape that functions as a remote Back Country open space (see Key Place setting and Desired Condition description above in Alternative 2).

Cultural modifications (e.g., communities) would generally be avoided along the localized Green Valley Re-route portion of the Alternative 2a transmission line. Other cultural modifications (i.e., communities and other land uses) found throughout the study corridor include the cities of California City, and Santa Clarita; the unincorporated communities of Mojave, Antelope Acres and Elizabeth Lake; dispersed rural residences, agricultural facilities and cultivated croplands; and numerous highways and other roads.

Scenic Attractiveness

The majority of the areas that would be crossed by the Alternative 2a transmission line on private and ANF lands are Class C scenery (45.0 miles). No Class A scenery would be crossed by the Alternative 2a transmission line. It would cross 21.0 miles of Class B scenery. All areas from the California Aqueduct south to the proposed Haskell Canyon Switching Station site, with the exception of an area of private land outside around the Johnson Road crossing, are Class B scenery.

Sensitive Viewpoints and Visibility

A total of 32 residences would have immediate foreground views of the Alternative 2a transmission line and would have 3.3 miles in the immediate foreground of residences and an additional 13.0 miles within the foreground distance zone.

The distance of foreground views from high sensitivity recreation viewpoints of the Alternative 2a transmission line would be 0.5 mile, and none within the immediate foreground distance zone. The Alternative 2a transmission line would roughly parallel the general alignment of the Pacific Crest National Scenic Trail on the ANF for approximately two miles and would cross the trail in a mountainous, natural area. This Alternative would have the most immediate foreground, foreground and middleground views of the transmission line from the Trail. The ANF Green Valley Camp Site would also be located within the foreground distance zone. The Antelope Valley California Poppy Reserve and the Elizabeth Lake Picnic Area on the ANF would be located along the alignment in the middleground distance zone.

The Alternative 2a transmission line would have 2.6 miles within the immediate foreground and an additional 5.3 miles of foreground views from high sensitivity transportation viewpoints on private and BLM lands. Elizabeth Lake Road, a First Priority County Scenic Highway and a Palmdale Scenic Highway, and San Francisquito Canyon Road, identified by the ANF as a viewpoint of high concern, would be crossed by the Alternative 2a transmission line and would have immediate foreground, foreground, and middleground views of the Alternative. Fairmont-Neenach Road and Johnson Road, both Second Priority County Scenic Highways, would also be crossed and would have immediate foreground, foreground, and middleground views of the transmission line. Lancaster Road, Munz Ranch Road, and 120th Street West, all Second Priority County Scenic Highways, would be located within the foreground distance zone. State Hwy 14, an Eligible State Scenic Highway; West Avenue I; 110th Street West; and West Avenue K, all Second Priority County Scenic Highways, would be located within the middleground distance zone. Lake Hughes Road, a Second Priority County Scenic Highway, would be located within the middleground distance zone and also within the background distance zone on ANF lands.

Alternative 3

The Alternative 3 transmission line would be 75.5 miles in length and would have 23 residences within the immediate foreground distance zone, 4.8 miles of ANF High and Moderate SIO landscapes crossed, and no crossing of Class A landscapes on private or BLM lands. Refer to Table 3.2.9-1 for a summary of the visual resource inventory for new transmission line component for each action Alternative.

SIO Classes

High SIOs on the ANF are established for 3.8 miles and 1.0 miles are Moderate SIO, fewer miles than the transmission line of the other Alternatives.

VRM Classes

The Alternative 3 transmission line would be the only transmission line among the Alternative to cross BLM-managed lands with established VRM Classes (0.1 mile VRM Class III). The Alternative 3 transmission line would cross 4.9 miles of unclassified landscapes.

Regional Setting and Landscape Character

From north to south, the Alternative 3 transmission line would pass through the Sierra Nevada Section of the Cascade-Sierra Mountains Province, the Great Basin Section of the Basin and Range Province, and the Los Angeles Ranges Section of the Pacific Border Province.

Within the ANF, the transmission line would pass through the Soledad Front Country Place, which is a "Key Place" in the ANF for its natural appearing area that functions as a scenic backdrop and transitional landscape. The setting of the Soledad Front County Place is one that runs northeast to southwest along both sides of California State Highway 14 along the Santa Clara and Soledad Rivers. This landscape is commonly defined as the area between California Interstate 5 at the southern end and the intersection of California State Highway 138 at the northern end. The northwest and southeast boundaries are, in general, defined by the area visible from California Highway 14. There is a Special Interest Area that highlights the heritage resource values of the area. The Desired Condition is tied to its natural appearance that functions as a scenic backdrop and transitional landscape. The valued landscape attributes to be preserved over time are the dramatic canyon and rugged mountain views, the presence of pine and juniper stands, and a well-defined age class mosaic with patches in chaparral. Private land between the two mountain ranges is acquired and the Pacific Crest National Scenic Trail is connected.

Cultural modifications (e.g., communities and other land uses) are found throughout the study corridor and include the cities of California City, Santa Clarita, Palmdale, and Lancaster; the unincorporated communities of Mojave, Antelope Acres, Quartz Hill, and Agua Dulce; dispersed rural residences, agricultural facilities and cultivated croplands; and numerous highways and other roads.

Scenic Attractiveness

The majority of the areas that would be crossed by the Alternative 3 transmission line are composed of Class C scenery (60.7 miles). The Alternative 3 transmission line would cross no

Class A scenery and 10.5 miles of Class B scenery on private and BLM lands. Class B scenery would be crossed west of Rancho Vista, at the Elizabeth Lake Road crossing, in the Ritter Ranch MRCA area, and in undeveloped areas from the east edge of ANF to the Bouquet Canyon area.

Sensitive Viewpoints and Visibility

A total of 23 residences would be within 500 feet of the Alternative 3 transmission line, and it would have the greatest distances of immediate foreground and foreground visibility of the transmission lines among the Alternatives (34.4 miles).

The Alternative 3 transmission line would have 6.3 miles within the immediate foreground and an additional 266.1 miles within foreground and middleground views of the transmission line. The Alternative 3 transmission line would cross the Pacific Crest National Scenic Trail in a residential area near the Sierra Highway. It would parallel and remain in close vicinity to the trail for approximately a half mile. The MRCA Ritter Ranch would also be crossed by the Alternative 3 transmission line and would have immediate foreground, foreground and middleground views of the transmission line. Veluzat Motion Picture Ranch would be located in the foreground distance zone. Trails within the Vasquez Rocks Natural Area and the Antelope Valley California Poppy Reserve would be located within the corridor in the middleground distance zone.

The Alternative 3 transmission line would have 1.4 miles of immediate foreground views and an additional 6.7 miles within foreground distance zone from high sensitivity transportation viewpoints on private and BLM lands. Elizabeth Lake Road, a First Priority County Highway and Palmdale Scenic Highway; Godde Hill Road, a Second Priority County and Palmdale Scenic Highway; and West Avenue K and Vasquez Canyon Road, Second Priority County Scenic Highways, would be crossed by the Alternative 3 transmission line and would have immediate foreground, foreground, and middleground views of the transmission line. The Sierra Highway, West Avenue I and 110th Street West, all Second Priority County Scenic Highways, would be located in the foreground distance zone. State Hwy 14, an Eligible State Scenic Highway, and Lancaster Road, Munz Ranch Road, Fairmont-Neenach Road, 120th Street West, West Avenue K, Johnson Road, 80th Street West and 60th Street West, all Second Priority County Scenic Highways, would be located in the middleground distance zone.

3.2.10 CULTURAL RESOURCES

Introduction

For this Final EIS/EIR, cultural resources are defined as any prehistoric or historic site, district, building, structure, or object considered to be important to a culture, subculture, or community for scientific, traditional, religious or any other reason. In this document, cultural resources are divided into two broad categories – archaeological resources (i.e., sites and isolated finds) and architectural resources (i.e., buildings and structures). Another class of cultural resource, cultural landscapes, has not been identified previously in the study area (D. Vance, personal communication 2011; D. Storm, personal communication 2011). Also, cultural resources of special importance to Native Americans, such as traditional cultural properties (TCPs) and sacred sites, have not been identified by the Angeles National Forest (ANF) or Bureau of Land Management (BLM) within the BRRTP study area or during consultation efforts conducted specifically for BRRTP (D. Vance, personal communication 2011; D. Storm, personal communication 2011).

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Cultural Resources Technical Report, a confidential document prepared for the Draft EIS/EIR. This report is hereby incorporated by reference in its entirety.

Overview of Methodology and Analysis Area

The BRRTP would extend from the Mojave Desert to the San Fernando Valley. The BRRTP analysis area for cultural resources covers areas in which cultural resources could be directly or indirectly impacted by one or more Alternatives.

The BRRTP analysis area includes land within the following areas:

- 250 feet on either side of the proposed centerline of the new 230 kV transmission circuit between the new Haskell Canyon Switching Station and the Castaic Power Plant;
- 250 feet on either side of the proposed centerline of the reconductoring of the existing BR-RIN 230 kV transmission line from the Barren Ridge Switching Station to the Rinaldi Substation;
- 250 feet from the new Haskell Substation;
- 250 feet from the expansion of the existing Barren Ridge Switching Station; and
- 250 feet on either side of the proposed centerline of the new 230 kV transmission line for each Alternative.

The locations of other Project components (e.g., new access roads, staging areas) would be expected to occur within the same analysis area although specific design has not been completed.

A Class I inventory was conducted to identify previously recorded cultural resources within the study area and their level of significance (i.e., their eligibility to be listed to the National Register of Historic Places [National Register] or California Register of Historical Resources [California Register]). Information was also compiled on which portions of the study area had been previously surveyed for cultural resources and the quality of these surveys. The survey data were used to identify locations within the study area that have been demonstrated to contain no surface evidence of cultural resources. In some cases, buried cultural resources may not be visible on the ground surface and would not be identified using standard survey methods.

Record searches to compile site and survey data for the Class I analysis were performed at:

- The South Central Coastal Information Center (SCCIC) at California State University – Fullerton (September 16 and 24, 2008; October 8, 9, and 10, 2008; May 21, 2009);
- The San Joaquin Valley Information Center (SJVIC) at California State University – Bakersfield (September 19 and 25, 2008; June 2 and 5, 2009);
- The Ridgecrest Field Office of the BLM in Ridgecrest (September 17, 2008); and
- The Angeles National Forest Supervisor's office in Arcadia (September 18, 2008).

In addition, the National Park Service (NPS) Focus database of National Register-listed properties, the National Historic Landmarks (NHL) program of the NPS, and lists of California Historical Landmarks (CHLs) and California Points of Historical Interest maintained by the State Office of Historic Preservation (OHP) were examined. Finally, lists of cultural resources determined eligible to be listed to or listed in the California Register were obtained from the Information Centers.

Using the Class I data, a cultural resource sensitivity analysis was performed of 0.1-mile-long and 500-foot-wide units along each transmission line Alternative under consideration. The sensitivity analysis was conducted to determine if particular portions of the Project area had greater potential for containing cultural resources than others. The assessment of resource sensitivity relied on existing cultural resource data where appropriate, but environmental criteria were also used to assess the potential cultural resource sensitivity of each 0.1-mile unit, even if it had not been surveyed for cultural resources. For this analysis, isolated finds were assumed to be not eligible to be listed to the National Register or California Register. However, the ultimate treatment of isolated finds and unevaluated properties in the BRRTP area would be addressed in a Construction Phase Management Plan (CPMP) as required by a Programmatic Agreement being prepared for BRRTP by the ANF, BLM, and State Historic Preservation Officer (SHPO). A summary of the criteria and process for assigning each 0.1-mile unit high, moderate, or low cultural resource sensitivity is presented below. The criteria were based on existing data from the SJVIC and SCCIC and recommendations by the ANF and BLM.

In determining sensitivity criteria, the following questions were used:

1. Has the 0.1-mile unit within the Alternative been surveyed intensively for cultural resources?

   Based on conversations with ANF and BLM staff, intensive surveys were defined as: 1) systematic surveys that used transect intervals of 15 meters or less; and 2) surveys performed after 1984, the year when OHP requirements for surveys changed significantly.

2. Does the 0.1-mile unit contain a cultural resource?

   Some resources were recorded during intensive surveys, some were recorded during non-intensive surveys, and some were discovered in other ways.

3. What is the cultural resource's significance?

   Resources were separated into three categories: those that have received an official federal or State designation (e.g., listed in the National Register or California Register) (High Sensitivity); those that have been determined or recommended eligible to be listed to the National Register or California Register or that have not been evaluated for listing eligibility (Moderate Sensitivity); and those that have been determined not eligible to be listed to the National Register or California Register or that are identified as isolated finds (Low Sensitivity).

4. What is the probability of an unsurveyed 0.1-mile unit containing a cultural resource?

   Areas that have been intensively surveyed are known to contain or not contain surface evidence of cultural resources. Cultural resources have also been recorded in unsurveyed areas. For most land that has not been surveyed, environmental variables were used to assess the probability of containing sites.

   BLM staff (D. Storm, personal communication 2008) suggested that in the eastern Mojave Desert and Antelope Valley portions of the study area, unsurveyed lands most likely to contain cultural resources (Moderate Sensitivity) would be less than 0.25 mile from a spring or in locations where drainages enter the desert lands from adjacent hills. Areas least likely to contain sites (Low Sensitivity) would be more than 0.25 mile from springs and cultivated lands. Cultivation would have destroyed most cultural resources even if they had once existed in the area.

   ANF staff (J. Walker, personal communication 2008) suggested that in the mountains, sites would most typically be found in locations less than two miles from a spring, seasonal drainage, or permanent water source that are also on slopes of less than 30 percent (Moderate Sensitivity). Also, sites would be expected on ridge tops, flats, and terraces (Moderate Sensitivity). Low sensitivity areas on the ANF would include terrain with slopes greater than 30 percent and locations more than two miles from a spring, seasonal drainage, or permanent water source.

Because of the limited amount of previous cultural resource survey along portions of some of the Alternatives, an effort was made in 2010 to survey moderate sensitivity areas within ANF boundaries along Alternatives 1, 2 and 2a. The proposed survey area included fifty-nine 0.1-mile-long, 500-foot-wide units, for a total of 358 acres, that were defined as moderately sensitive for cultural resources according to the criteria described above. However, the majority of the units selected for this Class II survey proved to be either too steep or too heavily vegetated for adequate field inspection. Only eight of the fifty-nine 0.1-mile units, a total of 48 acres, were practical to survey systematically using 15-meter intervals. No previously unrecorded cultural resources were discovered within these surveyed units.

Native American History

The study area traverses two distinctly different environments: the Mojave Desert/Antelope Valley and the Sawmill-Liebre Range, and prehistoric adaptations in the two areas differed accordingly. The periods of prehistoric occupation in the two regions are summarized in Table 3.2.10-1 and are briefly described below.

In the Mojave Desert/Antelope Valley and the Sawmill-Liebre Range, the earliest well-documented cultures—Paleoindians—are 10,000 to 13,000 years old. Native American groups of this period were nomadic hunter-gatherers living in small groups who hunted now-extinct species of large game animals and exploited other plant and animal species as well. Archaeological sites in the Mojave Desert dating to the Paleoindian Period are best recognized by the presence of Clovis projectile points. These points have been found along the former shorelines of dry Pleistocene lakes and in the Antelope Valley (Warren 1980, 1984; Warren and

Crabtree 1986). However, in the Sawmill-Liebre Range, evidence of these early occupants is extremely scarce (D. Vance, personal communication 2009).

TABLE 3.2-10-1. PREHISTORIC OCCUPATIONS IN THE BRRTP STUDY AREA

		Mojave Desert/Antelope Valley	Sawmill-Liebre Range	
	1770	Late Period	Late Period	
	1500			
	1000			
	500	Rose Spring/Saratoga Springs		
AD	1	Gypsum	Middle Period	AD
BC	1			BC
	500			
	1000			
	2000		Early Period/ Millingstone Horizon	
		Pinto		
	3000			
	4000			
	5000			
		Lake Mojave		
	6000			
	7000			
	8000			
		Paleo-Indian	Paleo-Indian	
	9000			
	10,000			
	11,000			

In the California deserts, the number of archaeological sites increased substantially after 8000 B.C., following the Paleoindian Period. In the Mojave Desert, sites are characterized by large, stemmed or concave-based projectile points. Subsistence was still based on hunting and gathering, and archaeological sites are often found along the former shorelines of dry Pleistocene lakes (Warren 1980, 1984; Warren and Crabtree 1986). This time period is unique to the Mojave Desert, and the Sawmill-Liebre Range does not have a corresponding time period.

By around 5000 B.C., the climate became drier and hotter. Sites of this time period are relatively rare in both the Mojave Desert and the Sawmill-Liebre Range. Native American subsistence shifted away from the shores of lakes, toward upland areas where food resources were more readily available. Tool types also changed during this period, with smaller projectile points becoming more common than previously. Milling stones such as metates and manos, which were used for grinding plant foods, are present but rare at these sites (Warren 1980, 1984; Warren and Crabtree 1986).

About 2000 B.C., climatic conditions shifted again, to cooler and moister. This change led to more favorable environmental conditions, which in turn contributed to an increase in human population in the Mojave Desert and the Sawmill-Liebre Range, the development of trade between different groups, and greater social complexity beyond a simple band structure. In the Sawmill-Liebre Range there was an increase in the variety of site types, included large villages, small permanent camps, rock shelters, workshops, seasonal-use camps, and mortuaries (Vance 2002a, 2002b). In both areas hunters exploited a wide range of game animals, including mountain sheep, and they probably used the atlatl. A wider variety of stone tools were used during this time; milling stones for grinding and processing seeds and plants were used as well (Warren 1980, 1984; Warren and Crabtree 1986).

About A.D. 500, smaller projectile point types and the bow and arrow were introduced. In the Antelope Valley, artifacts from some Rose Spring Period sites suggest that trade or other ties to coastal Native American groups may have been associated with local changes in subsistence and the development of larger villages (Warren 1980, 1984; Warren and Crabtree 1986). In the Sawmill-Liebre Range a similar pattern emerged. There was an increased use of fused shale rather than obsidian for making stone tools. Fused shale is found in the Fillmore area, which possibly suggests that the focus of trade shifted toward the coast and away from the desert. However, it could also suggest a disruption in earlier trade patterns and a shift toward more locally available resources (D. Vance, personal communication 2010).

During this period, the small Desert Side-notched projectile point became a distinctive temporal marker, and pottery appeared for the first time. Trade between different Native American groups increased along the Mojave River and over the Sawmill-Liebre Range, although there is evidence at the very end of the period that the trade network along the Mojave River had broken down. With this decline in trade in the 18th century, the abundance and size of villages in the Antelope Valley declined (Warren 1980, 1984; Warren and Crabtree 1986).

Ethnography

Understanding which 18th and 19th century Native American groups lived in the BRRTP study area is complicated because these groups typically had fluid linguistic and sociopolitical boundaries, or no boundaries at all. After the Spanish began colonizing coastal California in 1769, Native American groups were subject to dramatic social and cultural changes, including the establishment of the Spanish mission system and the introduction of new diseases that decimated native populations. Population declined even further during smallpox epidemics in 1863 and 1870.

Seven Native American groups were common to the BRRTP area: the Tataviam, Kitanemuk, Gabrieliño, Fernandeño, Chumash, Kawaiisu, and Serrano.

The territory of the Tataviam surrounded the upper reaches of the Santa Clara River drainage east of Piru Creek, and included the southwest portions of Antelope Valley. To the south, the territory extended into the San Gabriel Mountains just north of the Los Angeles Basin and San Fernando Valley (King and Blackburn 1978). Much of the southern portion of the BRRTP study area is included in Tataviam territory. Very little is known about the Tataviam because they virtually disappeared as a distinct sociopolitical group by 1900. By 1810 most Tataviam had been baptized at San Fernando Mission, and in 1916, the last speaker of the Tataviam language died.

Like their neighbors, the Tataviam probably followed an annual cycle of trapping, hunting and harvesting plants and animals. Settlements ranged from large villages of 200 people to small communities of fewer than 10 people. Groups consisting of several related families or larger kin groups lived in permanent villages (King and Blackburn 1978).

The Kitanemuk were a small tribe that lived on the southern and western flanks of the Tehachapi Mountains (Blackburn and Bean 1978). They may have been in contact with the Spanish as early as the 1770s, but there is little information available on this tribe because they were assimilated into the mission system very early. Some Kitanemuk lived at the Tejon Reservation in the 1850s.

The Kitanemuk likely followed a similar annual cycle to that of the Tataviam. It has been estimated that the entire group had 500 to 1,000 people, However, there is no data to directly support this claim, as it is primarily based on the size of territory the Kitanemuk occupied and their similarity to neighboring groups (Blackburn and Bean 1978).

The Gabrieliño (or Tongva) were one of the largest, wealthiest and most powerful aboriginal groups in southern California. Their tribal territory was centered in the Los Angeles Basin, but their influence extended as far north as the San Joaquin Valley. The territory included the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; several smaller tributary streams in the Santa Monica and Santa Ana mountains; all of the Los Angeles Basin; and adjacent coastal areas. Throughout Gabrieliño territory, there may have been 50 to 100 villages occupied at any one time, with the villages containing 50 to 200 people. Different groups of Gabrieliño adopted different lifestyles depending on local environmental conditions, although all were based on gathering plant foods, hunting or fishing. Villages were politically autonomous, each with its own leader. It was not until 1769 that the Spanish attempted to colonize Gabrieliño territory. As a result of disease and forced re-settlement, the population had declined dramatically by 1900.

The Fernandeño were the historic tribe within the San Fernando Valley. Before 1797 and prior to the establishment of the Spanish Missions, the Fernandeño were formed into villages, each composed of a single lineage. The lineages held territory, engaged in collective economic and ceremonial activity, and intermarried with other lineage groups to establish a complicated regional network of kinship, economic, and ceremonial ties (www.tataviam-nsn.us/heritage/tribal-history). Subsistence consisted of hunting small game and gathering acorns, yucca, juniper berries, sage seeds, and islay. The social and cultural ties and organization of the lineages established in the pre-mission period continued through the mission period from 1797 to 1846. Between 1847 and 1885, the Fernandeño were dispossessed of Mexican land grants at Encino, Cahuenga, Tujunga, Rocha's grant, and Sikwanga, all located near Mission San Fernando on land formerly held in trust for the Indians by the Catholic Church. Between 1886 and 1951, the community lived in the old section of the city of San Fernando (Fernandeño Tataviam Band of Mission Indians 2011).

The Chumash were a large wealthy tribe found along the coast from San Luis Obispo south and east to Malibu Canyon, and inland to the western edge of the San Joaquin valley (Grant 1978a, b). One interior Chumash group was found within or near the BRRTP study area, the Emigdiano Chumash (Grant 1978a, b; King and Blackburn 1978). The Emigdiano Chumash lived in extreme southwestern Kern County east of Castaic Lake. Some Chumash also lived in the Fort Tejon area. Grant (1978b) estimates that the total population was only several hundred, far smaller than Chumash populations along the coast. There is no ethnographic information available for the Emigdiano Chumash (Grant 1978b).

The Kawaiisu were a semi-nomadic hunting-gathering group located primarily in the southern Tehachapi Valley and in mountains to the north. Their subsistence activities took them as far south as Antelope Valley (Smith 1978). Occupying a definable territory, living and working in small family units, and spending their winters in a villages, the Kawaiisu were an autonomous political and ritual group. They were bound together by family, language, trade and ceremonial practices. Beyond the family groups, social structure was minimal. Related families usually lived close to each other and worked together in hunting and gathering food (Digital Desert n.d.1). For a time they lived on the Tejon Reservation north of the study area.

The Serrano, a hunting-gathering group, lived primarily east of the Mojave River and north of San Bernardino, but some maps indicate that the Serrano, at least as a linguistic group, extended possibly as far west as the BRRTP study area (Bean and Smith 1978b). The Serrano were organized into local groups claiming relatively small territories. There was no larger political organization and there was no formal territory defined for the entire tribe. Spanish influence on the Serrano was negligible until around 1819, but by 1834 most Serrano had been forced to relocate to missions and had lost much of their traditional culture. Today, many Serrano live on the Morongo and San Manuel Reservations.

Euro-American History

The transition from the prehistoric period to the historic era occurred during the mid-1700s when Spanish expeditions began arriving in the region to establish missions. Although most early missions were along the coast between San Diego and Sonoma, a few expeditions went inland. One of the first was led by Gaspar de Portola in 1769 into the upper reaches of the Santa Clara Valley near present-day Newhall. Following expeditions included those led by Pedro Fages in 1772 and by Fr. Garcés in 1776. Missions established in the general vicinity of the southern part of the BRRTP study area included Mission San Gabriel in 1776, Mission San Buenaventura in 1782, and Mission San Fernando Rey de España in 1797 (Garretson 2010). A mission outpost, or *estancia,* which became the headquarters for the San Fernando mission cattle ranch, was established at the confluence of the Santa Clara River and Castaic Creek in 1804 (Worden 1996). The decline of the missions as religious institutions began in 1821, when Mexico gained independence from Spain and ended in 1830 when the Mexican government removed the missions from church control (Castillo 1978).

During the early historic period, the Mojave Desert and Antelope Valley served as an important transportation corridor between the California coast and the Colorado River to the east. One of these early routes was the Mojave Road, which ran to the east of the BRRTP area (Digital Desert n.d.2). Another important travel corridor is the Spanish Trail, which crossed the desert south of the BRRTP area. The route was part of a network of trails used in the trading of horses and woolen products.

During the 1850s, the northern part of the study area experienced the first real surge of Anglo-American settlement in the desert. Gold was discovered in 1853 in Greenhorn Gulch northeast of the study area (Clark 1999). In locations that would eventually become the cities of Ridgecrest, Tehachapi, and Barstow, and the unincorporated communities of Rosamond and Mojave, small settlements developed to supply the mining operations. By 1854 the first of many stage lines was established in Kern County, one of which ran through San Francisquito Canyon.

Mining in the western Mojave Desert began in 1862 with the discovery of borax (SCVhistory.com 2009). Other non-metals mined in the Mojave region included clay, limestone, red clay and bentonite clay. Silver mining experienced a boom of about five years due to the high transportation costs and the declining value of silver. The mining boom rebounded with the discovery of gold in the hills just south of the town of Mojave (Ryan 2001). In the Sawmill-Liebre Range, gold was discovered in Placerita Canyon in 1842 leading to extensive mining operations throughout the mountains. Many of the early claims were located in Soledad Canyon, Texas Canyon, and near Acton, areas that continued to be mined well into the 20th Century (Vance 2001).

Between the mid-1850s and early 1860s, new residents of Kern County developed a moderate agricultural economy (Macko et al. 1993). A devastating drought caused the local farmers and cattle ranchers to shift to sheep-raising. The Tehachapi area served as a major center for moving sheep between summer and winter ranges (Macko et al. 1993). The arrival of the Southern Pacific Railroad increased settlement and small towns sprang up along the line including Rosamond, Lancaster, and Palmdale. The onset of another severe drought brought this land boom to an end. Antelope Valley recovered from the drought when irrigation projects made cultivation of fruit and nut trees and feed crops possible (Love 1997). Irrigation allowed for diversity in crop growth such as alfalfa, cotton, potatoes, onions, carrots, and corn.

From its founding in 1769, the city of Los Angeles relied on the Los Angeles River to provide irrigation water. In 1904 William Mulholland, superintendent of the City Water Department, suggested that the city should obtain water rights to the Owens Valley (LADWP 2009). Work began on the Los Angeles Aqueduct in 1907 and water first flowed into the San Fernando Valley in November 1913 and to the city of Los Angeles in June 1914 (LADWP 2009). The onset of World War II saw a boom in agriculture in Antelope Valley, the Sawmill-Liebre Range, and the Tehachapis (Dillon 2007). Real estate emerged as the top economic stimulus following World War II. The construction of the aqueduct spurred the greatest population growth (McKenna et al. 2007).

In the southern portion of the study area in the mid-1700s, Spanish expeditions began arriving in the region to establish missions to convert the native population to Catholicism. A mission outpost, or *estancia,* which became the headquarters for the San Fernando mission cattle ranch, was established at the confluence of the Santa Clara River and Castaic Creek in 1804 (Worden 1996).

In 1849, the Treaty of Guadalupe Hidalgo was signed between Mexico and the United States, and the region that would become the State of California came under the jurisdiction of the United States. California was admitted to the union in 1850.

The cattle industry continued to dominate the local economy until droughts decimated grazing areas and herds. Land speculators acted quickly to secure title to foreclosed land, ushering the period of Anglo-American dominance in the southern part of the study area (Castillo 1978). In 1875, Henry Newhall purchased a foreclosed rancho. Newhall sold some of the land to the railroad, and the Southern Pacific Railroad line was completed connecting the cities of Los Angeles and San Francisco. The town of Newhall was established around the railroad station (SCVHS n.d.).

In 1876, Charles Mentry of the Star Oil Works constructed the first oil pipeline in California from Pico Canyon to the refinery in Newhall. Eventually the pipeline was extended to the ocean in the city of Ventura (Harnish 1996).

Serving as a major contribution to overland transportation, the Butterfield Stage Route was once the primary overland mail route from Missouri to the west coast. It was started in 1858 by John Butterfield and ran approximately 2,800 miles from Tipton, Missouri to San Francisco, California. The stage route was in operation until 1861 (Alison 2009). In the study area, the Butterfield Stage Route traveled up San Francisquito Canyon through Green Valley.

A major transportation project that helped direct the path of settlement and development in the region was the building of the Old Ridge Road. Survey was completed in early 1914. The Old Ridge Road wasn't paved until 1919. In 1933, the route was replaced by Highway 99. The route was nominated to the National Register in 1991 by the ANF and listed in 1997 as a historic structure. Construction began on I-5 during the 1960s to accommodate the greater traffic loads then using Highway 99 and was completed in 1970 (Pool 1997; California Department of Water Resources 2000).

Where Ridgecrest is now located, a small scattering of settlers managed agricultural supplies for the miners in the 1850s. In the early 1900s, the Crum brothers moved to the area, and the town of Crumville developed around their dairy and farming operation. In 1941, the town of Crumville was officially named Ridgecrest by a unanimous vote and by 1963 the community became incorporated as the City of Ridgecrest (City of Ridgecrest n.d.).

Native American Concerns

For BRRTP, the ANF is responsible for Section 106 consultation with Native American Tribes that could potentially have interest in or who have traditional ties to the study area. Tribes were also contacted as part of the NEPA Scoping Process for the BRRTP. Several tribes responded to initial consultation letters sent by the ANF describing the Proposed Action and Alternatives and requesting tribal participation in the development of the Programmatic Agreement (PA).

Chairperson James Ramos of the San Manuel Band of Mission Indians was contacted on September 24, 2009 with a request for tribal participation in the development of the PA. On September 30, 2009 Andrew Salas of the Gabrieliño Group sent an e-mail expressing interest in the Project as it moves forward. On May 12, 2008 John Valenzuela of the Seven Feathers Corp/San Fernando Band of Mission Indians sent a letter providing information in regard to the availability of monitors during the construction phase of the Project. On June 9, 2008 the Morongo Band of Mission Indians sent a letter to the ANF commenting on aspects of the Project. On June 3, 2009 The Santa Ynez Band of Mission Indians/Tribal Elders Council sent a letter requesting that the Chumash, who are located in or near the study area, be informed of the undertaking and to also suggest that a Native American monitor be present during ground disturbing activities. Once it was confirmed that local tribes had been contacted regarding BRRTP, the Santa Ynez Band asked to be removed from further consultation. On June 30, 2009 the Owl Clan Consultants sent an e-mail expressing concern over the Proposed Action and Alternatives.

In addition to the consultation letters sent by the ANF, the agency's Tribal Liaison also held a meeting for all members of local Native American tribes to discuss a variety of issues, including the BRRTP. Letters were sent to tribal representatives announcing the time and location of the forum, which was held on April 18, 2009 at the Forest Supervisor's Office in Arcadia.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

This Final EIS/EIR presents the results of a background search of cultural resource data and limited cultural resource survey within Alternatives 1, 2, 2a, and 3. Most land along the Alternatives has not been systematically or intensively surveyed for cultural resources by professional archaeologists. For this reason, each Alternative may contain many cultural resources that have not yet been identified. Class III (intensive) cultural resource field inventories would be completed as required by Section 106 of the NHPA and CEQA for the selected route before construction begins.

Designated Resources

National- or State-designated properties in the BRRTP vicinity are listed in Table 3.2.10-2.

National Historic Landmarks (NHLs) are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. According to the NPS online list of NHLs (accessed September 2, 2008), there are 20 NHLs in Los Angeles County and only one NHL in Kern County. None are close to the BRRTP.

The NPS Focus database was reviewed on September 10, 2008 to determine whether any National Register-listed properties are located in the Project area. While a few exist in the general vicinity, only one, the Old Ridge Route, falls within the boundaries of any Alternative. The road parallels portions of the Alternative 1 230 kV transmission line.

The list of California Historical Landmarks (CHLs) maintained by the OHP was reviewed on September 11, 2008 and again on June 1, 2009. The ANF is the only CHL crossed by a BRRTP Alternative. However, at the suggestion of ANF cultural resource staff, and for the purposes of this analysis, this particular CHL is not analyzed as a cultural resource because the CHL includes all National Forest lands in the BRRTP area.

Information on sites listed in the California Register was obtained from the Information Centers in Fullerton and Bakersfield. The State Historical Resources Commission has designed the California Register program for use by State and local agencies, private groups, and citizens to identify, evaluate, register and protect California's historical resources. The Register is the authoritative guide to the State's significant historical and archaeological resources. Two California Register-listed properties are within the boundaries of BRRTP Alternatives: the Olive Power Plant Transmission Line and the Old Ridge Route (see Table 3.2.10-2).

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. Information on California Points of Historical Interest was obtained from the OHP. No Points of Historical Interest occur within the BRRTP area.

In its General Plan, the City of Santa Clarita has identified a number of local resources of historic interest.

TABLE 3.2.10-2. NATIONAL- AND STATE-DESIGNATED CULTURAL RESOURCES WITHIN ONE MILE OF BRRTP ALTERNATIVES

RESOURCE PRIMARY NUMBER	RESOURCE	BRRTP ALTERNATIVE	DISTANCE/ DIRECTION FROM COMPONENT	LISTED IN NATIONAL REGISTER	CALIFORNIA HISTORIC LANDMARK[1]	LISTED IN CALIFORNIA REGISTER[1]	CALIFORNIA POINT OF HISTORICAL INTEREST
Kern County							
19-001213	Willow Springs	Alternatives 2, 2a, 3	0.4 mile SW		X (No. 130)		
Los Angeles County							
19-000990 **19-188474**	Old Ridge Route, Halfway Inn, Reservoir Summit Service Center National Forest Inn	All Alternatives	0.0 mile 0.0 mile	X		X	
19-167231	Mission San Fernando Rey de España	All Alternatives	0.8 Mile SE	X	X (No. 157)		
19-186560	The Cascades	All Alternatives	0.3 mile SW		X (No. 653)		
19-186536	Lyons Station Stagecoach Stop	All Alternatives	0.7 mile W		X (No. 688)		
19-186535	Angeles National Forest	All Alternatives	0.0 mile		X (No. 717)		
19-186553	St. Francis Dam Disaster Site	Alternatives 2, 2a	0.9 mile NW		X (No. 919)	X	
19-186552	Beale's Cut Stagecoach Pass	All Alternatives	0.8 mile W		X (No. 1006)	X	
19-180722 **19-003474**	Lopez Adobe/La Casa de Geronimo Lopez	All Alternatives	0.9 mile SE	X			X (No.105)
19-002132	Olive Power Plant 1 Transmission Line	All Alternatives	0.0 mile			X	

[1] CHLs No. 770 and above are automatically listed in the California Register. CHLs below No. 770 are listed in the California Register only upon action by the State Historical Resource Commission.

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Other Cultural Resources

Most of the cultural resources previously recorded in the BRRTP area have not been formerly designated by any federal, State, or local entity. Data on these resources was obtained from the SCCIC, SJVIC, USFS, and BLM.

The listing eligibility status of known cultural resources within each Alternative transmission line corridor is summarized in Table 3.2.10-3. Isolated finds are assumed for this analysis to be not eligible to be listed to the National Register or California Register, but each isolated find identified within the selected Alternative would be evaluated for listing eligibility on a case-by-case basis.

TABLE 3.2.10-3. LISTING ELIGIBILITY STATUS OF PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN 250 FEET OF THE CENTERLINES OF THE 230 KV TRANSMISSION LINE FOR EACH ALTERNATIVE

	Alternative 1	Alternative 2	Alternative 2a	Alternative 3
Total Resources	41	22	22	33
Listed in National Register, Listed in California Register	1*			
Determined Eligible to be listed to National Register, Listed in California Register	1	1	1	1
Determined Not Eligible to be listed to National Register; or Assumed Not Eligible as Isolated Find	6	7	7	7
Unevaluated	31	13	13	23
No Information	2	1	1	2

*Old Ridge Route, including Reservoir Summit Service Center, HalfWay Inn, and National Forest Inn as contributing elements

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

Six cultural resources have been previously recorded within 250 feet of the new circuit from Haskell Canyon Switching Station to Castaic Power Plant. All of the sites are historic and include: the West Pettinger Canyon mines, two transmission lines, two road segments including the Old Ridge Route, and the Los Angeles Aqueduct. The Old Ridge Route is listed in the National Register and the California Register and the Olive Power Plant 1 Transmission Line is eligible to be listed to the National Register and is listed in the California Register. The remaining sites have not been evaluated.

Reconductoring of BR-RIN Transmission Line

Thirty-eight cultural resources have been previously recorded within 250 feet of the BR-RIN Transmission Line. Of these, 26 are historic, two are prehistoric, 8 are prehistoric isolated finds, and two have an unknown cultural affiliation (i.e., inventory forms were missing from files). The 26 historic sites include: historic Forest Service roads, the Randsburg Cutoff Road, mining sites, to include the West Pettinger Canyon mines, two transmission lines, a recreational residence tract, historic trash scatters, the Los Angeles Aqueduct, and structural remains. One of the transmission lines, the Olive Power Plant 1 Transmission Line, is eligible to be listed to the National Register and is listed in the California Register. The prehistoric sites and isolates consist of lithic scatters, storage sites, and a rock ring. The remaining historic sites and the prehistoric sites and isolates have not been evaluated for listing eligibility.

New Haskell Canyon Switching Station

There are three historic sites within 250 feet of the new Haskell Canyon Switching Station grading area: the West Pettinger Mines, the Olive Power Plant 1 Transmission Line, and the Southern California Edison Antelope Transmission Line. The Olive Transmission Line is eligible to be listed to the National Register and the other two sites have not been evaluated for listing eligibility. There are no recorded sites within 250 feet of the planned expansion area for the Barren Ridge Switching Station.

Expansion of Barren Ridge Switching Station

There are no recorded sites within 250 feet of the planned expansion area for the Barren Ridge Switching Station.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

A total of 41 resources have been previously recorded within 250 feet of the Alternative 1 230 kV transmission line centerline. Historic cultural resources include trash scatters, a homestead site, foundations, a labor camp associated with the Los Angeles Aqueduct, the Los Angeles Aqueduct itself, transmission lines, roads (including the Old Ridge Route), and a mining complex. Prehistoric sites consist of two lithic scatters and an earth oven.

Most resources along the Alternative 1 transmission line have not been evaluated for listing eligibility. The Old Ridge Route is listed in both the National Register and the California Register. Contributing elements to the Old Ridge Route include the Reservoir Summit Service Center, remains of the HalfWay Inn, and remains of the National Forest Inn. The Olive Power Plant 1 Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. The Randsburg Cut Off road has been determined not eligible to be listed to the National Register. For this analysis it is assumed that isolated finds are not eligible to be listed; however, when the survey of the selected route is undertaken, each isolated find would be evaluated for National Register listing eligibility.

Alternative 2

A total of 22 resources have been previously recorded within 250 feet of the centerline of the Alternative 2 230 kV transmission line. Recorded historic sites include roads, trash scatters, the San Francisquito Summer Home Tract, transmission lines, mining sites, and an old adobe. Prehistoric sites consist of a storage site and a habitation site.

The Olive Power Plant I Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. For this analysis it is assumed that isolated finds are not eligible to be listed; however, when the survey of the selected route is undertaken, they would be evaluated for their National Register and California Register listing eligibility. Most sites were unevaluated.

Alternative 2a

The number and types of cultural resources in Alternative 2a transmission line corridor are identical to those for the Alternative 2 transmission line.

Alternative 3

Thirty-three cultural resources have been previously documented within 250 feet of the Alternative 3 transmission line centerline. Identified resources include historic roads, trash scatters, mining sites, ranching complexes, remains of a hog farm, and two transmission lines. Prehistoric sites include a quarry, lithic scatters, four sites with either cupules on boulders or grinding slabs, a shallow rock-lined pit, and a bedrock mortar.

Out of all of the sites recorded along the Alternative 3 transmission line corridor, only one is eligible to be listed to the National Register and has been listed on the California Register: the Olive Power Plant 1 Transmission Line. For this analysis it is assumed that isolated finds are not eligible to be listed; however, when the survey of the selected route is undertaken, they would be evaluated for their National Register and California Register listing eligibility. Most sites have not been evaluated.

3.2.11 WILDFIRE AND FUELS

Introduction

Construction, operation and maintenance of the proposed Project have the potential to create wildfires and wildfire-related impacts. This section describes the wildfire ecology in the study area and the regulations governing wildfire prevention. A Wildlife and Fuels Technical Report, located in Volume III, was prepared for the Proposed Action and Alternatives and contains detailed information on wildfire behavior conditions and potential power transmission line fire hazards within the affected environment.

Overview of Methodology and Analysis Area

The BRRTP Proposed Action and Alternatives were field-verified for existing wildfire and fuels attributes and conditions. Each Alternative was surveyed within the borderzone, an area extending a quarter-mile outward on either side of the centerline associated with the Alternative. The borderzone, which represents the wildfire and fuels study corridor and the area identified where potential wildfire risk exists, was divided into half-mile square segments. Each half-mile segment was visually inspected. In those circumstances where access was limited, segments were observed using binoculars from nearby ridges or high access points.

Six wildfire and fuel attributes were identified and analyzed within the study corridor and are described in more detail in the Technical Report. Attributes and conditions of topography, fuels and vegetation, roads, wildfire containment conflicts, assets at risk, and new line/existing segments along the study corridor were GPS recorded and documented. In addition to the field inventory, additional data was received from local agencies and programs, and satellite imagery was utilized for verification of existing attributes in areas where field verification was not possible.

For the purposes of this Final EIS/EIR, a fireshed assessment area of approximately 496,000 acres was identified. Firesheds are regional landscapes that are conceptually analogous to watersheds and are referred to as the limits of an area in which an ignition that escapes containment could spread under extreme weather conditions. Areas of the Proposed Action and Alternatives outside the BRRTP fireshed were assessed and determined insignificant for existing wildfire and fuel risks.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Wildfire Behavior Conditions

The presence of dense, dry fuels and a warm, arid climate characterizes Southern California as having one of the most fire-prone landscapes in the world. Factors influencing wildfire behavior and magnitude include forest structure, fuel conditions, climate, and the source of ignition.

Weather is one of the most significant biophysical factors of wildfire behavior. The summer months of Southern California are arid and warm, with very little precipitation. Drought and Santa Ana Occurrences (SAO) are native weather conditions to Southern California that drive catastrophic wildfires. SAO are seasonal weather events that generally occur during autumn months (September to December) when cool air rises from the ocean, creating high off-shore winds that mix with the hot, arid desert air. High pressure builds in the desert and forms a strong pressure gradient with low pressure in the coastal ranges, creating winds exceeding 60 miles per hour that blow into the valleys.

Fuels are organic material (living or dead) in and/or on the ground or in the air that would ignite and burn. Fuel conditions are considered a bipartite element of wildfire behavior having anthropogenic and biophysical components. Anthropogenic influences on fuel conditions are a result of active vegetation management (i.e., mastication, prescribed burning, brush removal, or eradication of non-native species) which alters its composition and structure. Moisture content, above-ground biomass, and fuel structure and composition are biophysical components of fuel conditions.

The topography of a given area integrates slope, aspect, and elevation. Large upland ridges burn more frequently when compared to valleys, swamps, or riparian areas. Steep slopes promote the preheating of fuels, which leads to a rapid upslope fire spread. Difficult terrain reduces the effect of fire suppression efforts and often creates barriers for firefighters, aerial attacks, and fire engines. High elevations may contain reduced fuel loads, while mid-elevations may allow for the growth of dense forests and chaparral communities. Slope, aspect, and elevation comprise the topography of a geographical area and are highly influential on wildfire behavior.

Human intervention (arson, negligence) would most likely occur around or in highly recreated areas and rights-of-way. Arson is deliberate and has caused most of the catastrophic wildfires. Human negligence could be shooting guns, improperly extinguishing a campfire, cigarettes, or exhaust sparks from off-highway vehicles.

BRRTP Fireshed

The BRRTP fireshed is approximately 496,000 acres, covering multiple land ownerships over portions of Los Angeles, Kern, and Ventura Counties (see Figure 3 in the Wildfire and Fuels Technical Report in Volume III of this Final EIS/EIR). SAO originating from the Great Basin create extreme fire weather conditions that are characterized by low humidity, sustained high-speed winds, and strong gusts. The fireshed is also influenced by the variation in elevation. The elevation in the BRRTP fireshed ranges from 926 vertical feet in the valleys and basins to 5,790 vertical feet at peak mountain ranges.

The fireshed assessment defined seven distinct eco-regions. These are briefly described in the following narrative and shown on Figure 3.1 in the Wildfire and Fuels Technical Report.

High Desert plains and hills (87,887 fireshed acres): This eco-region consists of the western Mojave Desert and exhibits a desert climate. This region experiences a high pressure gradient that primes the Santa Ana wind events. The soils are predominantly comprised of alluvial plain and pediment with small hills. Within the eco-region boundary the vegetation composition is predominantly shrubs, comprising approximately 53,000 acres.

San Gabriel Mountains (9,204 fireshed acres): The eco-region boundary includes the western edge of the San Gabriel Mountains, situated to the north of the unincorporated community of Sylmar. It is adjacent to the east side of the Simi Valley-Santa Susana Mountains eco-region and to the south side of the Sierra Pelona-Mint Canyon eco-region. The underlying geology contains mostly granitic rock on steep to very steep slopes. Due to lower elevations, the soils are somewhat mesic.

Simi Valley-Santa Susana Mountains (5,222 fireshed acres): This region comprises a small portion west of the city of San Fernando and north of the city of Granada Hills. The eco-region is characterized by steep mountains transcending into the gently sloping floodplains of the wildland-urban interface. The soils are well drained and the soil moisture regime is mostly xeric.

Los Angeles plain (15,602 fireshed acres): This eco-region is located within a small portion of the fireshed and is bordered by the eco-regions of the Simi Valley-Santa Susana Mountains and San Gabriel Mountains in the San Fernando Valley. The climate is hot and moderately humid and is influenced by the Pacific Ocean's marine layer. Precipitation ranges over the eco-region from 12-20 inches annually. The region is similar to the San Gabriel Mountains in geology. The region is characterized by floodplains levels/terraces and very gently sloping to sloping alluvial fans. The soils are well drained and soil moisture regimes are xeric.

Sierra Pelona-Mint Canyon (152,762 fireshed acres): This eco-region is defined by its location east of I-5 and bordering the wildland-urban interface of the Santa Clarita Valley, the Los Angeles Basin, and the city of Palmdale suburbs. The eco-region is characterized by mid-elevation foothills and urban development. The soils are well drained and have xeric characteristics. Underlying rock is sedimentary with portions of granite. Significantly, Santa Ana winds formed in the desert advance toward the low pressure of the Coastal Ranges, and sweep through the Santa Clarita Valleys and Los Angeles Basin of this eco-region. Within the eco-region boundary, the vegetation composition is predominantly occupied by shrub.

Northern Transverse Ranges (202,512 fireshed acres): Extending horizontally across the fireshed, this eco-region, the largest area within the fireshed, is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands. The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley.

The fire season for the Northern Transverse Ranges is highly dependent on the winter snowpack and spring weather conditions. The eco-region is dominated by southern mixed chaparral series with a sparse mixture of deciduous and pine forests, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin.

San Rafael-Topatopa Mountains (22,460 fireshed acres): This eco-region spans west of I-5, adjacent to the southwestern portion of the Northern Transverse Ranges and northwestern section of the Sierra Pelona Mint Canyon eco-regions. This eco-region does not contain the Proposed Action or Alternatives, but is adjacent to other eco-regions where the Alternatives are located. The region is characterized by the mid-low elevation foothills transcending into the West Central Valley. The slopes of the mountains are steep with narrow canyons and the soils are well drained with the soil moisture regime being xeric.

Angeles National Forest Fire Management Units

A Fire Management Unit (FMU) is any land management area definable by objectives, land features, access, values to be protected, political boundaries, fuel types, major fire regimes, or special management areas designated by agency policy or congressional action. Four FMUs have been established for the ANF, each representing unique fire management challenges. Only three of the four FMUs are discussed in relation to the BRRTP fireshed (see Figure 3 in the Wildfire and Fuels Technical Report). The units were established to allow analysis of specific fire management needs and issues.

FMU-1 – Wildland-Urban Interface (WUI)

This FMU is characterized by lower elevation shrub- and grass-dominated fuels systems and includes the majority of the urban wildland interface areas. This FMU has the highest number of ignitions on an annual basis when compared to other FMUs. A major source of the ignitions comes from the transportation routes included in the FMU. I-5 and State Highway 14 are located within the FMU and the BRRTP fireshed.

Fuels within the FMU have been under constant change due to the high frequency of fires. The steep slopes can act to limit the capabilities of mechanized equipment during the firefighting efforts. The density of the urbanization in the FMU dictates that dire prevention activities would be centered on maintaining defensible space around improvements. While protection of private property would remain a key suppression objective, the ability to take aggressive perimeter control actions is as important to mitigating the threat to property as defensive structure protection actions are.

FMU-2 – Non-Wilderness

The FMU fuels are characterized by the density of the fuels and the canopy closure in this mid-elevation range. With increasing elevation, the lower grasslands transition into denser and larger chaparral vegetation types. The FMU consists of an urban intermix consisting of private property, structures, and federal facilities. Within the unit there also exist established suppression control features, such as the Santa Clara and Sierra Pelona fuelbreaks. These features need to be maintained through the use of prescribed fire, mechanical, or biological means.

Steep slopes and heavily bisected topography limit control opportunities within the FMU. Mechanized equipment is restricted in many areas to the primary ridge systems. Fires under typical weather patterns run to the ridge tops, where changes in the alignment of the fire spread allow for successful suppression operations to be conducted. Lateral spread is a function of winds and fuel moistures. As live fuel moisture decreases, lateral spread increases in the chaparral fuel type; this lateral spread often allows a fire to reposition for rapid upslope fire runs.

FMU-4 – Wilderness

Only 750 acres of land is designated Sespe wilderness within the BRRTP fireshed. The FMU is best characterized by tactical limitations to fire suppression and LMP direction for Wilderness Management. Limited access to the area requires that the Forest rely on aerial firefighting and detection methods to operate within this Unit.

Alternatives within the Fireshed

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station) would be the same for each action Alternative.

The new circuit between Haskell Canyon and the Castaic Power Plant would be entirely within the BRRTP fireshed. Forty-three miles of the reconductoring would occur within the BRRTP fireshed assessment area. The new switching station in Haskell Canyon would be located south of the ANF on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines. The Proposed Haskell Canyon Switching Station is within State Fire Suppression Responsibility Area. Expansion of the existing Barren Ridge Switching Station, located in Kern County, is outside of the BRRTP fireshed and the study area for wildfire hazards.

New 230 kV Double-Circuit Transmission Line

Alternative 1

The Alternative 1 230 kV transmission line would run from the Barren Ridge Switching Station to the unincorporated community of Mojave, California, while paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would continue south-southeast to parallel the Los Angeles Aqueduct to Lancaster Road, where it would travel west to the Interstate 5 freeway utility corridor. It would then run southeast along LADWP's existing Castaic – Rinaldi corridor to the proposed Haskell Canyon Switching Station. The Alternative 1 transmission line would run 32.5 miles through the BRRTP fireshed. The firefighting responsibility areas would be composed of 16.1 of federal and 16.4 miles of State. Land ownership for the Alternative 1 transmission line within the fireshed would be split between 15.9 miles of the Angeles National Forest, 0.3 mile of California Department of Fish and Game, and 16.3 miles of other (private, county, and city properties). This proposed alignment would transect three USFS Land Use Zones, including 7.6 miles of Developed Areas Interface, 8.2 miles of Back Country, and 0.8 mile of Back Country Motorized-Use Restricted; the remaining 14.7 miles of transmission line would be located outside the Land Use Zones under non-federal jurisdiction. The FMUs of the Alternative 1 transmission line would consist of 17.7 miles of Forest Non-Wilderness and 14.3 miles of Wildland Urban Interface.

Alternative 2 (Proposed Action)

Beginning at the Barren Ridge Switching Station, the Alternative 2 transmission line would run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from the unincorporated community of Mojave, California to the Antelope Valley California Poppy Reserve. It would continue south into National Forest System lands, remaining within designated utility corridors, and terminating at the proposed Haskell Canyon Switching Station. The Alternative 2 transmission line would run 27.4 miles through the BRRTP fireshed. The firefighting responsibility areas would be composed of 13.3 miles of federal, 7.4 miles of State, and 6.7 miles of local. Land ownership for the Alternative 2 transmission line within the fireshed would be split between 13.9 miles of the Angeles National Forest and 13.4 miles of other (private, county, and city properties). This proposed alignment would transect two USFS Land Use Zones including 6.2 miles of Developed Areas Interface and 8.6 miles of Back Country; the remaining 12.6 miles would be located outside Land Use Zones under non-federal jurisdiction. The FMUs of the Alternative 2 transmission line would consist of 14.8 miles of Forest Non-Wilderness and 2.5 miles of Wildland Urban Interface, with the remaining 10.1 miles outside FMUs.

Alternative 2a

The Alternative 2a transmission line would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI transmission lines. It would travel south from Mojave towards the Antelope Valley California Poppy Reserve. It would continue south into National Forest System lands, bypass the unincorporated community of Green Valley, and travel over the ridge along an existing fire road. The route would be within ANF lands, but outside the USFS 1,000-foot designated utility corridor. The alignment would connect back to the Alternative 2 (Proposed Action) alignment south of Green Valley, and end at the proposed Haskell Canyon Switching Station. Alternative 2a would run 28.8 miles through the BRRTP fireshed. The firefighting responsibility areas would be composed of 15.4 miles of federal, 6.0 miles of State, and 7.4 miles of local. Land ownership for the Alternative 2a transmission line within the fireshed would be split between 15.4 miles of the Angeles National Forest and 13.4 miles of other (private, county, and city properties). This proposed alignment would transect two USFS Land Use Zones including 13.2 miles of Back Country and 1.9 miles of Developed Areas Interface; the remaining 13.8 miles would be located outside Land Use Zones under non-federal jurisdiction. The FMUs of the Alternative 2a transmission line would consist of 15.5 miles of Forest Non-Wilderness and 3.3 miles of Wildland Urban Interface, with the remaining 10.1 miles outside FMUs.

Alternative 3

The Alternative 3 transmission line would begin at the Barren Ridge Switching Station and run south, paralleling LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines. It would travel south from the unincorporated community of Mojave, California to the Antelope Valley California Poppy Reserve. It then would travel southeast past SCE's Antelope Substation to Palmdale, paralleling SCE's existing high-voltage transmission lines. It would make a sharp turn to the south-southwest to Haskell Canyon while paralleling LADWP's existing Victorville-Rinaldi 500 kV and Adelanto-Rinaldi 230 kV transmission lines. The Alternative 3 transmission line would run 40.3 miles through the BRRTP fireshed. The firefighting responsibility areas would be composed of 0.3 mile of federal, 20.7 miles of State, and 16.8 miles of local. Land ownership for the Alternative 3 transmission line within the fireshed would be split between 2 miles of the Angeles National Forest and 39.6 miles of other (private, county, and city properties). This proposed alignment would transect one USFS Land Use Zone consisting of 2.1 miles of Back Country; the remaining 38.8 miles would be located outside the Land Use Zones under non-federal jurisdiction. The FMUs of Alternative 3 would consist of 14.4 miles of non-federal units, 2.8 miles of Forest Non-Wilderness, and 24.4 miles of Wildland Urban Interface.

3.2.12 ELECTRICAL EFFECTS

Introduction

This section describes electric and magnetic fields in the area of the Proposed Action and Alternatives Identified in Chapter 2. Specifically, this section presents the conditions of the affected environment, and describes regulations, plans, and guidelines that pertain to electrical effects from the transmission facilities in the BRRTP area.

The assessment of electric and magnetic fields shall: 1) provide an overview of the technical methodology used in collecting baseline conditions; 2) examine the affected environment with respect to electrical effects; and 3) present the regulatory framework.

Overview of Methodology and Analysis Area

Electric and Magnetic Fields

Electric and magnetic fields (EMF) are present wherever electricity flows: around appliances and power lines, in offices, schools, and homes. Electric fields are invisible lines of force, created by voltage, and are shielded by most materials. Units of measure are volts per meter (V/m). Magnetic fields are invisible lines of force, created by electric current and are not shielded by most materials, such as lead, soil and concrete. In the United States, magnetic field strength units of measure are Gauss (G) or milliGauss, where 1 G = 1,000 mG. Much of the world's scientific community measures magnetic field strength in units of Tesla (T) and microTesla (μT) where 10,000 G = 1 T, 1G = 100 μT, and 1mG = 0.1 μT. Electric and magnetic field strengths diminish with distance. These fields are low energy, extremely low frequency fields, and should not be confused with high energy or ionizing radiation such as X-rays and gamma rays.

Some studies have reported a weak association between estimates of residential magnetic field exposure and certain types of childhood cancer. These studies have not shown that the magnetic fields from power lines actually cause cancer. Some worker studies have also found associations between estimates of EMF exposure and some forms of cancer, but these results have been very inconsistent. Laboratory experiments have shown that exposure levels typically well above those normally found in residences can produce changes in cells, but there is little or no evidence that these changes constitute a health risk.

Electrical transmission and distribution line systems are not the only sources of magnetic fields. Within homes and work places, local sources of magnetic fields include building wiring and plumbing, electric blankets, electric stoves, computer terminals, bedside clocks, ceiling fans, and other appliances that people may use for prolonged periods. It is noteworthy that some of the common sources of higher magnetic fields are appliances and electrical devices found within the home. The magnetic field levels from such sources in typical use can range up to thousands of mG or higher; however, the duration of exposure from many appliances is typically much shorter than that from other sources. Thus, exposure to both electric and magnetic fields occurs continuously, and is not simply a function of living or working near a power line or facility. Exposure depends upon the many sources and field strengths that are present where a person lives, works, and otherwise spends time.

A majority of people in the United States are exposed to magnetic fields that average less than 2.0 mG. Table 3.2.12-1 depicts estimated average magnetic field exposure of the U.S. population from residential sources, according to a study commissioned by the U.S. government as part of the EMF Research and Public Information Dissemination (EMF RAPID) Program. This study measured magnetic field exposure of a sample of people of all ages randomly selected among the U.S. population. Participants wore or carried with them a small personal exposure meter and kept a diary of their activities both at home and away from home. Magnetic field strength values were automatically recorded twice a second for 24 hours. The study reported that exposure to magnetic fields is similar in different regions of the country and similar for both men and women.

Possible Health Effects of Electric and Magnetic Fields

This section reviews the results of selected reports pertaining to possible links between electric and magnetic fields and health effects. Results are presented in chronological order and demonstrate how scientific knowledge in this area is still unfolding.

A number of studies in the late 1980s and 1990s investigated a possible association between power lines and EMF and the incidence of childhood leukemia. The studies included:

- Four studies which used wire codes to assess exposure to EMF were considered to be of sufficient quality to evaluate an association between the incidence of childhood leukemia and exposure to magnetic fields (Wertheimer & Leeper 1979; Savitz et al. 1988; London et al. 1991; Linet et al. 1997). The wire code method includes a number of factors, such as the wiring in the home, and the distance of home from the power line.

- Four studies were considered to be of sufficient quality by the National Institute of Environmental Health Sciences (NIEHS) to be used in an evaluation of the association between the incidence of childhood brain tumors and classification of exposure based on wire codes (Savitz et al. 1988; Wertheimer & Leeper 1979; Gurney et al. 1996; Preston-Martin et al. 1996b).
- Three studies of appliance use evaluated the association between the incidence of childhood leukemia and exposure to magnetic fields (Hatch et al. 1998; London et al. 1991; Savitz et al. 1990).

TABLE 3.2.12-1. RESIDENTIAL SOURCES OF MAGNETIC FIELDS[3]

Source	Magnetic Field Strength[4] (mG)
Kitchen	
Blenders	20
Coffee Makers	1
Dishwashers	30
Electric Ranges	30
Refrigerators	20
Bedroom	
Digital Clock	8
Analog Clock	30
Living/Family Room	
Color Televisions	20
Window Air Conditioners	20
Ceiling Fans	50
Laundry/Utility	
Electric Clothes Dryer	3
Washing Machines	30
Vacuum Cleaners	200
Portable Heaters	40
Workshop	
Drills	40
Power Saws	300

In 1996, a National Research Council committee of the National Academy of Sciences (NAS) released its evaluation of research on potential associations between EMF exposure and cancer, reproduction, development, learning, and behavior. The report concluded:

> "Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."

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[3] "EMF Questions & Answers", U.S. National Institute of Environmental Health Services, EMF RAPID Program, 2002

[4] The magnetic field strengths are measured at a distance of one foot from the source.

The NAS focused primarily on the association of childhood leukemia with the proximity of the child's home to power lines. The NAS panel found that although a link between EMF exposure and increased risk for childhood leukemia was observed in studies that had estimated EMF exposure using the wire code method; this link was not found in studies that had included actual measurements of magnetic fields at the time of the study.

In 1992, the U.S. Congress authorized the EMF-RAPID Program in the Energy Policy Act (PL 102-486, Section 2118). The Congress instructed the NIEHS, National Institutes of Health, and the Department of Energy to direct and manage a program of research and analysis aimed at providing scientific evidence to clarify the potential for health risks from exposure to extremely low frequency (ELF) EMF.

More recently, childhood leukemia has been associated with exposure to magnetic fields in the highest exposure groups, in recent reviews and pooled studies (International Agency for Research on Cancer [IARC] 2001, Ahlbom et al. 2000, and Greenland et al. 2000). The basis for these relationships remains unexplained (Brain et al. 2003). Kavet and Zaffanella (2002) suggested that contact currents could explain the association between high residential magnetic fields and childhood leukemia. Contact currents flow through the body whenever a person touches two conductive surfaces that are at different voltages. Leukemia in childhood is rare. In the U.S., about 2 to 3 cases per 100,000 person years for children 0 to 20 years old have been reported, but the rate peaks at two to three times this rate in 0- to 4-year olds (Brain et al. 2003).

In the first of the analyses of pooled data, Ahlbom et al. (2000) reported that if nine studies that included long-term measurements of magnetic fields were pooled, a statistically significant association could be found for childhood leukemia in the children with average exposures of 4 mG (0.4 microTesla) or greater. For children with lower average exposures, no significant elevation of childhood leukemia was found in the pooled studies. Magnetic field strength would exceed 4 mG from the center of the proposed transmission line to a point on either side of the line roughly 45 feet from the center of the transmission line. In the second of the analyses of pooled data, Greenland et al. (2000) reported that if the 15 studies for which magnetic fields were measured (or could be estimated) were pooled, a statistically significant association (relative risk = 1.7) could be found for childhood leukemia in the children with average exposures of 3 mG (0.3 microTesla). For children with lower average exposures, no significant elevation of childhood leukemia was found in the pooled studies. According to the authors, this data indicates that exposure to power-frequency magnetic fields could account for 0-8% of childhood leukemia deaths in the United States.

The World Health Organization's IARC met in June 2001 to review the scientific evidence regarding the potential carcinogenicity of static and ELF EMF. An international scientific panel was created consisting of 21 experts from 10 countries. The panel categorized its conclusions for carcinogenicity based on the IARC classification system that evaluates the strength of evidence from epidemiological, laboratory (human and cellular), and mechanistic studies (classifications are "carcinogenic to humans," "probably carcinogenic to humans," and "possibly carcinogenic to humans"). The IARC concluded that:

> "ELF magnetic fields are possibly carcinogenic to humans, based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia and power-frequency (50 or 60 Hz) residential ELF magnetic field strengths above 0.4 microTesla. In contrast, no consistent evidence was found that childhood exposures to ELF electric or magnetic fields are associated with brain tumors or any other kinds of solid tumors. No consistent evidence was found that residential or occupational exposures of adults to ELF magnetic fields increase risk for any kind of cancer."

Short and Long Term Health Effects

Pacemakers. The potential for pacemaker interference from power line fields depends on the manufacturer, model, and implantation method, among other factors. Studies have determined thresholds for interference of the most sensitive units to be about 2,000 to 12,000 mG for magnetic fields and about 1.5 to 2.0 kV/m for electric fields (University of Rochester 1985). Guidelines for occupational exposure suggest that electric field exposure should not exceed 1 kV/m or 1,000 mG for workers with cardiac pacemakers (ACGIH 2001). It is unclear that reversion to a fixed pacing mode is harmful since pacemakers are routinely put into reversion with a magnet to test operation and battery life. Some new pacemaker models are dual chamber devices that can be more sensitive to external interference. Some of these dual chamber units may experience inappropriate pacing behavior (prior to reversion to fixed pacing mode) in electric fields as low as 1.2 to 2 kV/m, while other models appear unaffected in fields up to 20 kV/m. The biological consequences of brief, reversible pacemaker malfunction are mostly benign. An exception would be an individual who has a sensitive pacer and is completely dependent on it for maintaining all cardiac rhythms. For such an individual, a malfunction that compromised pacemaker output or prevented the unit from reverting to the fixed pacing mode, even brief periods of interference, could be life-threatening (Sastre 1997). The precise coincidence of events (i.e. pacer model, field characteristics, biological need for full function pacing) would generally appear to be a rare event.

Brain and Breast Cancer. Numerous occupational studies of adults have also been performed to examine the relationship between magnetic or electric fields and adult cancers including leukemia and brain and breast cancers. These studies have concentrated on occupations presumed to have high exposure to EMF and have varied greatly in study design and exposure assessment methods. These studies published through 2002 are described in the International Agency for Research on Cancer (IARC) monographs (IARC 2002). A consistent relationship between adult cancer and exposure to electric or magnetic fields has not been found (Gammon et al. 1988; Kheifets et al. 1999; Wrensch et al. 1999; Laden et al. 2000; Zheng et al. 2000; Davis et al. 2002; London et al. 2003; Schoenfeld et al. 2003; and Forssen et al. 2005).

Miscarriage. Studies such as Li et al. 2002 have examined the association between magnetic field exposure and miscarriage in San Francisco, California. No association was found between TWA magnetic field exposure and miscarriages. However, miscarriage risk increased with an increasing level of magnetic field exposure above 16 mG.

Conclusion

The association between measured fields and childhood leukemia is weak, and it is not clear whether it represents a cause-and-effect relationship. At present, the available series of studies indicates no association between EMF exposure and childhood cancers other than leukemia. Far fewer of these studies have been conducted than studies of childhood leukemia. There have been more than 30 detailed reports on both long-term and short-term studies of EMF exposures in laboratory animals (bioassays) conducted by researchers. Long-term animal bioassays constitute an important group of studies in EMF research. Such studies have a proven record for predicting the carcinogenicity of chemicals, physical agents, and other suspected cancer-causing agents. Researchers compared groups of animals treated with cancer initiators to groups treated with cancer initiators and then exposed to EMF, to see if EMF exposure promoted the cancer growth (initiation-promotion model). Other studies tested the cancer promotion potential of EMF using mice that were predisposed to cancer because they had defects in the genes that control cancer. Most of the studies conducted for animals (primarily rodents such as rats) suggest a lack of carcinogenicity, and the few with borderline positive results are inadequate to conclude that exposure to magnetic fields at the magnitude and field configurations at which they were investigated increases the incidence of cancer in rodents.

Electric and Magnetic Induction

The primary issue is how the induced or coupled voltages and currents on powered objects can compromise safety to a person who comes in contact with the object. Researchers have done extensive work in the area of perception of 60 hertz (Hz) power system currents. The electrical effects on humans start with perception and as current levels increase, let-go levels are next in importance. Higher current levels can lead to ventricular fibrillation and respiratory inhibition, which can cause death. Generally, for safety purposes, it is desirable to reduce the induced voltage and currents to levels that result in current flow through the body below the let-go threshold. Ultimately sufficient safeguards should be provided to reduce body currents below the perception limit. The reported perception of electrical current is a median level of approximately 1.0 mA. The let-go threshold is defined as the highest current (RMS) flow in a hand to hand or hand to foot path for which a conductor held in a hand may be released. This threshold is extremely important since it defines a minimum dangerous current for the onset of an uncontrollable situation. The average let-go current for women and men was found to be 10.5 milliamperes (1/1000 of an ampere referred to in a condensed unit of "mA") and 16.0 mA, respectively. In the smallest percentile for let-go currents measured, the currents have been reported to be as low as 6.0 mA for women and 9.0 mA for men. It has been estimated that 4.5 mA would be a reasonably safe let-go threshold for children. The National Electrical Safety Code (NESC) requires that power lines be designed to keep the induced current from nearby objects below 5.0 mA when short-circuited to ground. The short circuit current can be calculated for any object in or near the corridor to determine if the magnitude of the current is below the 5.0 mA rule for safety purposes.

The other situation in terms of electrical currents is a fault current. This would be a current that flows to ground as a result of an abnormal situation on the power line such as a broken conductor. The fault current is primarily a function of the time it takes for the utility to clear the fault. As the time of exposure decreases, the body tolerance to current levels increases.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

The methodology and analysis presented above is relevant for each of the Project Alternatives.

3.2.13 SOCIOECONOMICS

Introduction

This section describes the potential socioeconomic setting within the area of the Proposed Action and Alternatives. The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Socioeconomic Resources Assessment Report, contained in Volume III of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Socioeconomic Resources Assessment Report, please refer to that report for more detailed information on Proposed Action and Alternatives setting and effects on socioeconomic resources.

Overview of Methodology and Analysis Area

The socioeconomic study area broadly considered Kern, Ventura, and Los Angeles Counties. Detailed results of the study related to Ventura County can be found in the Socioeconomic Resources Assessment Report located in Volume III of this Final EIS/EIR. For purposes of this Final EIS/EIR, effects to Ventura County in regards to socioeconomics from the Project would be minimal and therefore are not included within the discussion. The northern one-third of the Proposed Action and Alternatives is located near the Tehachapi Mountain range and the Mojave Desert areas of Southern California in Kern County, while the southern two-thirds is generally located within the Angeles National Forest (ANF) and more urbanized communities such as the cities of Los Angeles, Lancaster, Palmdale, and Santa Clarita in Los Angeles County.

The population of the two-county area ranges from high-density urban in the northern part of the city of Los Angeles, to suburban/urban in the cities of Palmdale, Lancaster, and Santa Clarita in northern Los Angeles County, to rural in unincorporated north Los Angeles County and southern Kern County. The unincorporated communities of Rosamond and Mojave, act as rural centers closest to Proposed Action and Alternative routes in southern Kern County, with the Tehachapi area being somewhat more distant, but offering more housing and urban services. Employment bases in the region varies from urban service-oriented in the more densely settled cities of Los Angeles and Santa Clarita, to resource-oriented (oil and gas, and outdoor recreation) in Kern County.

To identify the most important, noticeable socioeconomic impacts, the local study area was defined. Communities within the area were examined, focusing on communities closest to Project Alternatives (those communities in southern Kern and northern Los Angeles Counties). In general, workers needed to construct and operate Project facilities—not including specialized workers, who tend to be somewhat itinerant, temporarily relocating near their work sites for the duration of their work—would be drawn from areas within commuting distance of Project facilities. In addition, the itinerant workers who migrate to the area for work would be most likely to select residences that would be within ready commuting distance, with somewhat of an additional preference for residences in communities offering urban services. Communities nearest the Alternative routes could be most affected, as in-migrating workers would tend to seek accommodations, and spend money on accommodations, retail goods, restaurants, and miscellaneous needs in those communities.

While these areas include all areas that could potentially be locations for workers, in general the worker locations, would be mostly concentrated in the areas closest to Project Alternatives – i.e., within a 45- minute commute of any Project facility. Since the city of Lancaster and the city of Palmdale are located about midway, from north to south, in the local area, offer reasonable commutes, and have urban services including ample hotel/RV supplies, of all the local communities, these two communities would most likely be the source of the most substantial numbers of locally hired workers, as well as the preferred location for the largest numbers of in-migrating Project workers. When construction occurs south of the ANF, the city of Santa Clarita would likely be a primary location for workers moving to the area to be near their work sites.

Finally, all areas within six miles of any Alternative corridor were also addressed in the Environmental Justice Analysis.

Population

Table 3.2.13-1 lists the historical population estimates, population densities, and average annual growth for the cities and two counties within the Project area, and California from 1980 to 2008.

TABLE 3.2.13-1. HISTORICAL CITY, COUNTY AND STATE POPULATION ESTIMATES, 1980-2008, AND 2000 POPULATION DENSITIES.

					Average Annual Growth (%)			
City	4/1/1990	4/1/2000	2005	2008	1990-08	2000-08	2000 Land Area (Sq Mi)	2000 Persons per Sq. Mi. 2008
California	29,758,213	33,873,086	36,675,346	38,049,462	1.37%	1.26%	155,959.34	217.19
Kern County total	**544,981**	**661,653**	**753,395**	**817,517**	**2.28%**	**2.46%**		
California City	5,955	8,385	11,505	14,365	5.01%	5.74%	203.55	41.19
Tehachapi	6,182	11,125	11,909	13,089	4.26%	1.73%	9.58	1,161.27
Los Angeles County total	**4,209,724**	**4,554,368**	**4,871,793**	**5,025,876**	**0.99%**	**1.06%**	**4,060.87**	**1,121.53**
Los Angeles (County seat)	3,485,557	3,694,742	3,932,740	4,045,873	0.83%	0.97%	469.07	7,876.74
Glendale	180,038	194,973	205,746	207,157	0.78%	0.61%	30.65	6,361.27
Santa Clarita	110,690	151,131	166,926	177,045	2.64%	1.77%	47.83	3,159.75
Palmdale	68,946	116,670	135,808	147,897	4.33%	2.67%	104.96	1111.566311
Lancaster	97,300	118,718	132,925	145,243	2.25%	2.33%	94	1262.957447
Burbank	93,649	100,316	106,084	108,029	0.80%	0.79%	17.35	5,781.90
San Fernando	22,580	23,564	24,804	25,230	0.62%	0.68%	2.38	9900.840336
La Canada Flintridge	19,378	20,318	21,475	21,276	0.52%	0.40%	8.65	2,348.90

Sources:
State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.
U.S. Bureau of the Census, American FactFinder, 2000 Census, for land area estimates.
For Communities within the City of Los Angeles:
Los Angeles Almanac, 2008. City of Los Angeles Population by Community & Race 1990 Census. http://www.laalmanac.com/population/po24la_1990.htm
Los Angeles Almanac, 2008. City of Los Angeles Population by Community & Race 2000 Census. http://www.laalmanac.com/cities/index.htm http://www.laalmanac.com/population/po24la_1990.htm

Kern County

Kern County is the third largest county (in acreage) in California, with a population of 817,517 on January 1, 2008 (California Department of Finance 2008). Its population density is very low, at 81 persons per square mile, compared to a statewide average of 217.

County population growth has been rapid since 2000, at 2.5% per year. Bakersfield, the county seat, has been the primary focus of this growth, having grown by 3.5% annually after 2000, to 328,692 persons on July 1, 2008 (California Department of Finance 2008).

Incorporated cities are not located within the immediate vicinity of the Project in Kern County. Just north, however, is the city of Tehachapi, which could be a residence for both local hires for Project construction, and for in-migrating workers. The city of Tehachapi's population was 13,089 on July 1, 2008. In 2000, however, the combined surrounding unincorporated, but urbanized, communities of Golden Hills, Bear Valley Springs, and Stallion Springs exceeded that of the city of Tehachapi (U.S. Bureau of the Census 2000).

Unincorporated Kern County communities near the vicinity of the Project include Rosamond (year 2000 Census population: 14,349), Mojave (year 2000 Census population: 3,836), and Lebec/Gorman (year 2000 Census population: 1,285), as well as the unincorporated communities near the city of Tehachapi of Golden Hills (year 2000 Census population: 7,434), Bear Valley Springs (year 2000 Census population: 4,232), and Stallion Springs (year 2000 Census population: 1,522). Most of the Kern County land area within the vicinity of the Project is rural farmland, and undeveloped/vacant.

Population projections for Kern County by the Kern County Council of Governments call for a slowing of its historical rapid population growth to 1.9% annually from 2006 to the year 2030. The only available sub-county projections are for the Tehachapi area, which is projected to experience a relatively rapid population growth rate of 2.5% annually.

Los Angeles County

Los Angeles County is the most populous county in California, with 5,799,584 persons on July 1, 2008 (California Department of Finance 2008). The City of Los Angeles accounted for 4,045,873 of the county population. Unincorporated Los Angeles County accounted for an additional 1,092,078 persons within the Project area. Population estimates are shown in Table 3.2.13-1.

Incorporated communities in the vicinity of the Project include the cities of Santa Clarita, Palmdale, and Lancaster; portions of the Alternatives pass through each of these cities. All potential Project routes would pass through the city of Santa Clarita, which is the most urbanized area in the vicinity of the Project. The City of Santa Clarita's population was 177,045 as of July 1, 2008, an average annual increase of 1.8% since 2000.

Portions of some Alternatives would traverse the city of Palmdale and the city of Lancaster, in northern Los Angeles County. Both cities experienced average annual growth exceeding the county average in 2000-2008, at 2.7% and 2.3%, respectively (the overall county growth rate was 1.0%). As of July 1, 2008, the City of Palmdale's population was 147,897, and the City of Lancaster's population was 145,283.

Other incorporated cities in proximity are to the south of the city of Santa Clarita, in the San Fernando Valley. These include the cities of Glendale (July 1, 2008 population: 207,157), Burbank (July 1, 2008 population: 108,029), Pasadena (July 1, 2008 population: 148,126), San Fernando (July 1, 2008 population: 25,230), and La Canada Flintridge (July 1, 2008 population: 21,276). These cities may be potential sources of Project labor and thus would benefit from Project wage payments to workers who live there, but likely not locations where in-migrating Project workers may choose to live because they are within a reasonable commute of only the southernmost Project Alternative facilities.

In addition, the unincorporated area of North Los Angeles County, while not as densely settled as most of the incorporated areas, is home to significant population. Annual population estimates for the unincorporated area of north Los Angeles County have not been developed by the California Department of Finance, which only estimates county unincorporated areas as a whole, not for unincorporated subareas. The Southern California Association of Governments (SCAG) estimated the 2005 population of "Unincorporated North Los Angeles County" at 132,797 (SCAG 2008).

Population projections for Los Angeles County by the SCAG call for generally slow growth. Strong growth, however, is projected for the cities of north Los Angeles County (Santa Clarita, Lancaster, and Palmdale are all projected to grow over 1.2% annually), and for unincorporated north Los Angeles County (4.0%).

Race and Ethnicity

Kern County populations had predominantly "White Only" race in the year 2000, and had higher proportions of "White Only" persons than the State as a whole, at 69.9% and 61.6%, respectively. Los Angeles County has a more diverse racial composition than did the State. In Los Angeles County, the "White Only" population represented under 50% of the population; the County had no majority racial population.

The major ethnic minority in the three-county Study Area, as it is in the State of California, is "Hispanic or Latino." Each of the three counties has a higher proportion of this ethnicity than the State as a whole. In Los Angeles County, the proportion was nearly a majority, at 46.9 percent (and increased to 47% by July 1, 2006 [U.S. Bureau of the Census 2008]).

Projections by the California Department of Finance call for a much faster rate of growth for the Hispanic population than for other race or ethnic populations in Kern and Los Angeles Counties. In all three counties, the numbers of Hispanic persons are expected to exceed that of the White-only non-Hispanic population (the historical majority) during the next decades, currently the case in Los Angeles County. By 2010 the Kern County population is expected to have more Hispanic than White-only non-Hispanic persons and the same is projected to occur by 2030.

Housing

Census 2000 data should be understood with caution given significant changes in housing markets since the financial crisis, which began being evident in 2007. However, rental (as opposed to owner-occupied or for-sale) unit data may be broadly indicative of the level of housing available.

For the vicinity of the Project as a whole, measured on a zip code basis, there were about 5,000 vacant units for rent in the year 2000. Rental vacancy rate were mostly above 5%, which is generally considered to be the approximate threshold for "tight" rental markets.

Economy

Kern County has generally (with sectoral exceptions such as construction) been somewhat more insulated from economic slowdowns than has Los Angeles County. The slowdowns of 1991-93 and 2001-03 meant generally larger year-to-year percentage declines for Kern County than for Los Angeles County. The recession of 2007-2009, while "officially" ended, is still playing out in the three-county area, and thus no conclusions can be drawn as yet. Economic data presented below include employment and unemployment and income data.

Employment and Unemployment

Employment growth in the three-county study area has been generally healthy since 1990. Los Angeles County growth, however, has lagged compared to the State and U.S. as a whole over that period, increasing at 0.3% annually (compared to 1.2% Statewide), in part as employers have chosen to locate in its nearby counties. Kern County annual employment growth rates were 2.0% from 1990 to 2006.

Unemployment rates in the three-county study area have historically exhibited substantial seasonal swings in Kern County, but not in Los Angeles County due to its more mature and less resource extraction-based nature. In Los Angeles County, seasonal variation exists, but is not significant in light of total county employment. As Kern County's economies have grown and diversified, however, this seasonal volatility has tempered. These data also show that in Kern County, unemployment rates have historically been significantly higher than in Los Angeles County.

The number of unemployed persons in the labor force is a more important indicator of how many people might be available to fill new employment opportunities, such as those provided by the Proposed Action and Alternatives. As with the unemployment rate, counties located in the study area show seasonal swings in the rolls of the unemployed, particularly in Kern County due to its heavier reliance on farming.

Kern County unemployment is used as the base because it is the majority source of possible labor pool for projects in the Antelope Valley. Generally, about 30,000 unemployed persons have resided in Kern County.

The number of Los Angeles County unemployed is much larger, at a historical average of about 275,000 persons. However, most of these unemployed Los Angeles County residents likely do not live within ready commuting distance of the vicinity of the Project. A more realistic estimate of the Los Angeles County unemployed work force that could commute to the Antelope Valley would include those living in the cities of Lancaster, Palmdale, Santa Clarita, Burbank, Glendale, Pasadena, San Fernando, and the unincorporated north Los Angeles County area.

Although comprehensive data on the number of unemployed workers within a reasonable commute of the vicinity of the Project are unavailable, a minimum number can be estimated based on California Employment Development Department data. Using only the cities in the immediate vicinity of Project routes as the base, these data indicate a total unemployed work force of about 12,000 as a historical average. Since these data do not cover all areas (including unincorporated areas) in the vicinity of the Project, they should be understood to be minimums.

Employment by Industry
Kern County's economy has historically been based in mining, agriculture, and forestry and fisheries, and remains so through recent years. However, employment in the farming sector has declined numerically, and the mining and forestry and fisheries industries have experienced minimal change. In addition, the county economy has diversified as it has grown, rendering them smaller as a proportion of total county employment. Construction, transportation, real estate, and administrative services grew somewhat as proportions of total county employment from 2001 to 2006 (U.S. Department of Commerce, Regional Information System 2008a).

As of 2006, the largest sectors (at the REIS two-digit level of aggregation) were State government, retail trade, and forestry and fisheries. However, the raw proportions of employment by industry do not always fully correspond to their true importance to an areas export base. Although the three main resource extraction industries do indeed show high concentrations in Kern County, federal civilian employment is also highly concentrated in the county relative to nationwide averages, indicating it is also important.

Industries in Kern County with the highest concentrations relative to national averages include: farming; mining; military; federal, civilian; finance and insurance; and forestry, fishing, related activities, and other.

Los Angeles County employment patterns reflect those of major central cities, with a broad diversity of service export employment. Retail trade, manufacturing, professional and technical services, local government, and health services were the largest employers in 2006.

Distribution of total employment somewhat obscure the actual export base of Los Angeles County. Los Angeles County industries with the highest concentrations relative to national averages include: wholesale trade; information; and arts, entertainment, and recreation. The motion picture and video industry (part of the broader arts and entertainment industry) while not one of the top industries in terms of share of total employment, however, is by far the leading export industry in the County. Several other industries closely related to this sector are important as well (such as artists and performers).

Construction Employment
A final indicator relevant to the Proposed Action and Alternatives' employment is construction jobs located in the study area. Construction employment is a primary indicator of economic cycles, and the study area reflects that status. Construction employment peaked in early 2006 in

all three counties, before the mortgage crisis began to affect builders' plans. Currently, construction employment is relatively low from its 2006 peak, but historical data show that it tends to grow over any complete business cycle. Furthermore, regional total construction employment does not tend to be seasonal, except in Kern County. Los Angeles County indicates no remarkable seasonal fluctuations, as there are in Kern County.

The data show that a drop of about 4,000 construction jobs has occurred in Kern County over the past two years. Barring a very rapid increase in construction employment by the start of Project construction, this may indicate some availability of local residents for Project construction jobs, relative to the high construction employment (and therefore low unemployment in the construction trades) of the pre-2007 years.

Income

Personal income in the study area exhibits a common trend, with the more rural satellite county (Kern County) having lower per capita income than the more diversified (Los Angeles County).

Per capita income in Los Angeles County has declined compared to the State as a whole since 1990, particularly since the year 2000. The Los Angeles County income growth rate has been only 0.4% annually, or below the rate of inflation, while State per capita income has grown at 3.9% annually over the same period. Kern County per capita incomes have barely kept up with inflation since 2000, increasing by 2.9% annually, and are significantly below per capita incomes in Los Angeles County and statewide. Some or most of this difference in apparent per capita well-being may be explained by lower costs of living in Kern County, particularly for housing.

Recent published income distribution data are unavailable for the study area. However, the 2000 Census included income distribution data. Of particular importance is the rate of poverty, which is analyzed in greater detail in the Environmental Justice section later in this report for the areas within six miles of Project routes. Overall regional income distribution data are presented herein.

Income distribution for the three counties in the study area reported in the 2000 Census (reporting incomes in 1999) show that Kern County had a higher proportion of households and persons in low-income categories, and a lower proportion in higher income categories. Los Angeles County followed the general distribution as did the State as a whole.

Census County Divisions in the general area of the Proposed Action and Alternatives were also tabulated. This region generally encompasses the cities of Tehachapi and Bakersfield to the north, and the northern part of the city of Los Angeles to the south, and east-central Kern County to the east. Thus, this region is somewhat larger than the zip code-based region used to estimate population in the vicinity of the Project earlier in this chapter. In summary, 6.7% of persons in this somewhat broader region had incomes under the poverty level, compared to a statewide average poverty rate of 6.3 percent. At the upper end of the income distribution, 2.9% of households had incomes over $200,000 in 1999, compared to a statewide average of 3.6 percent. The income distribution of this region looks much like that of the State.

Economic Projections

Statewide economic projections performed by the California Department of Finance (2008a) show a slowing economy. However, since these forecasts were performed in April, 2008, they do not account for the financial markets crisis of late 2008, and hence are highly likely to be overly optimistic.

Employment projections for Kern County by the California Employment Development Department (EDD) (2005) predict an overall increase of 15.3% during 2004-2014, or 1.4% annually. This represents a slightly lower annual average growth rate of 1.9% from 2000-2006.

Corresponding employment projections for Los Angeles County include a much slower total employment increase of 10.3% during 2004-2014, or 0.9% annually. This would be a noticeably higher annual average growth rate than the 0.4% from 2000-06.

The SCAG (2008) also publishes employment projections, but Kern County is not included. Unincorporated North Los Angeles County (3.1% average annual projected growth), and the cities of Lancaster (1.9%), Santa Clarita (1.6%), and Palmdale (1.4%) were predicted to have higher growth rates than overall Los Angeles County from 2005-2035.

Fiscal Conditions

City and county revenues are generally designed to match costs, with occasional year-to year differences typically accommodated by transfers in and out of contingency funds. The Proposed Action and Alternatives are not expected to result in noticeable increases to local costs of public services, because long-term in-migration to the study area is expected to be minimal relative to population and economic activity levels. Very few new students for schools (and hence class space or teacher employment), or requirements for general government services, police or fire personnel, etc. are expected to result due to the short term of construction and only a handful of new jobs provided by Project operations. Thus, local jurisdiction costs of public services are not addressed in detail. In the sections that follow, these costs are addressed only superficially.

The primary focus is on local government revenues for jurisdictions in which Project Alternatives are located, particularly property taxes. These include unincorporated Los Angeles and Kern counties, and the cities of Palmdale, Lancaster, Santa Clarita, and Los Angeles.

Unlike most development projects, the Proposed Action would not generate any property taxes for jurisdictions because the Project would be exempt under Article 13, Section 11 of the California State Constitution. Thus, the primary tax revenues generated by the Proposed Action and Alternatives would be in the form of retail sales and use taxes from spending of workers' incomes in the local economy. This could be interpreted as loss of potential property taxes, which are important revenue sources for the regions cities and counties.

Los Angeles and Kern counties, and all cities therein, impose the local (county/city) one percent sales and use tax on taxable sales within their jurisdictions. Total sales tax rates in almost all of Los Angeles County, including the unincorporated north county area, the cities of Lancaster, Palmdale, and Santa Clarita, and the northern part of the city of Los Angeles, are 9.25%. Sales taxes total 8.25% on taxable sales in almost all of Kern County, including throughout the vicinity of the Project.

Los Angeles County

More than 65% of Los Angeles County—2,649 square miles—is unincorporated. The Los Angeles County Board of Supervisors is the primary decision-making body, and County departments provide the municipal services. The budget to provide these services was $22.5 billion in Fiscal Year (FY) 2007-08.

The most important sources of funds for Los Angeles County are special funds and district revenues (21% of total County revenue), State assistance (20%), federal assistance (18%), and property taxes (16%). The county receives an insignificant share of sales tax revenues (0.2%).

City of Los Angeles

The City of Los Angeles depends to a much greater degree on property and sales taxes (about 41% of total general fund revenues) than does Los Angeles County (16%, virtually all from property taxes). Unlike the County, the City gets very little intergovernmental revenue.

City of Santa Clarita

The City of Santa Clarita relies more heavily on sales and use taxes (54% of its total General Fund revenues), and property taxes (29%), than does Los Angeles County.

City of Palmdale

The City of Palmdale's leading source of projected General Fund revenues was property taxes at 41% for FY 2008-09. Conversely, sales and use taxes constitute much less than that in the City of Santa Clarita, at 29%.

City of Lancaster

The City of Lancaster's leading source of projected General Fund sales and use and property taxes were nearly equal for FY 2008-09, at 33% and 32%, respectively.

Kern County

Kern County collects much less of its budgeted revenues from State aid (4% in FY 2007-08) than does Los Angeles County (20%). The County relies most heavily on federal aid for its revenues, at 23% of its total. Property taxes are also very important to the County revenue base, at 22% of the total.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

The methodology and analysis presented above is relevant for each of the Project Alternatives.

3.3 NATURAL ENVIRONMENT

3.3.1 BIOLOGICAL RESOURCES

Introduction

The existing biological environment, sensitive plant and wildlife species, and vegetation communities supported within and adjacent to the BRRTP study area located in Los Angeles and Kern County, California are described in this section. This section also identifies the regulatory framework including existing laws and regulations relevant to biological resources. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Action or Alternatives. The purpose of this study and analysis is to review the Proposed Action and Alternatives in sufficient detail to determine to what extent any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA), birds protected under the Migratory Bird Treaty Act (MBTA) or Bald and Golden Eagle Protection Act (BGEPA), or designated as sensitive or of special concern by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), and BLM may be affected.

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Biological Resources Technical Report, contained in Volume IV of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Biological Resources Technical Report, please refer to that report for more detailed information on Proposed Action and Alternatives effects on biological resources.

In compliance with the California Environmental Quality Act (CEQA) and ESA, the LADWP, USFS, and BLM have consulted with the United States Department of the Interior, U.S. Fish and Wildlife Service (USFWS) and CDFG management and staff. The purpose of these consultation meetings and associated correspondences was to help identify biological issues, study potential occurrences and distribution of plants and wildlife and their habitats, and develop survey and mapping protocols to be used to prepare biological studies for the Proposed Action and Alternatives. This coordination is ongoing; refer to the Biological Resources Technical Report for a description of coordination and correspondence with both State and federal agencies.

Overview of Methodology and Analysis Area

The BRRTP would extend from the Mojave Desert to the San Fernando Valley. The northern portion of the Proposed Action and Alternatives crosses the westernmost Mojave Desert and Antelope Valley south and east of the Tehachapi Mountains to the base of the Sawmill-Liebre Range (also known as the Castaic Range or Sierra Pelona Mountains). The southern portion crosses the Sawmill-Liebre Range and the upper Santa Clara River, and extends into the San Fernando Valley where it terminates at Rinaldi Substation.

The physiography of the Project area in the Los Angeles and Kern County regions from north to south is the flat Antelope Valley gradually rising in elevation (northern region) and giving way to the foothills of the Angeles National Forest (central region). Continuing south, the foothills gradually give way to the city of Santa Clarita (southern region). Drainages originating from the foothills of the ANF have carried rock detritus and water to the Santa Clarita area. This has produced several riparian areas which support a rich, varied, and unique ecosystem. The diversity and distribution of biological resources within the study corridor are a function of the regional climate, soils, and topography. For most of the region, the availability of water or soil moisture is the critical factor that determines the broad distribution of vegetation types and associated wildlife species.

The analysis identified and characterized biological resources, including vegetation community types, riparian habitats, and special-status plant and animal species that are known to occur or have potential to occur in the Project area. Information was collected from existing reports, books and manuals, and field collection of new data specific to the Proposed Action and Alternatives. The Project area was defined as the area either directly or indirectly impacted by the Proposed Action and Alternatives.

To identify the existing and potential biological resources present in the vicinity of the Proposed Action and Alternatives, a Geographic Information System (GIS) search was performed. This consisted of mapping baseline biological resource data (vegetation mapping, California Natural Diversity Database [CNDDB] records, USFS National Resource Information System (NRIS) database, habitat conservation areas, water resources, and potential jurisdictional areas). The following U.S. Geological Survey (USGS) quadrangles were reviewed: Agua Dulce, Black Mountain, Cache Peak, Del Sur, Fairmont Butte, Green Valley, Lake Hughes, La Liebre Ranch, Lebec, Liebre Mountain, Little Buttes, Mint Canyon, Mojave, Mojave NE, Monolith, Neenach School, Newhall, Ritter Ridge, San Fernando, Sleepy Valley, Soledad Mountain, Tylerhorse Canyon, Warm Springs Mountain, Whitaker Peak, and Willow Springs.

The survey corridors for the protocol surveys were 150 meters (500 feet) wide (250 feet on each side of transmission line centerline). Amphibian species and their potential habitat were surveyed up to five miles from the centerline to describe the potential of indirect impacts from construction activities (see Appendix E of the Biological Resources Technical Report).

The field habitat reconnaissance survey evaluated the quality of the habitat for special-status species and/or proximity of the habitat to a known occurrence of a species. Information used to determine known occurrence locations included CNDDB data, USFS data (for the Angeles National Forest), California Native Plant Society (CNPS) records, consultation with Wildlife Agencies, and reference to published species accounts. Field survey activities included documenting plant and animal species or sign observed within the study corridor, mapping vegetation communities, and photo-documenting existing biological conditions for all identified potential Project routes. The potential for occurrence of special-status species not observed during field investigations was assessed based upon evaluation of species distribution, including range that may extended outside the Project area, and habitat use and information from previous research studies and biological reports.

Habitats for special-status species of plants and animals were classified for presence of the species as “absent,” “unlikely,” “possible,” “likely,” or “present.” Refer to Appendices A and B of the Biological Resources Technical Report for a list of these classifications. These classifications were derived from an evaluation of the ability of key habitat components to supply the life requisites on selected species of fish and wildlife (USFWS 1980). Evaluation involves using the same key habitat components to compare existing habitat conditions and optimum habitat conditions for the species of interest. Optimum conditions are those associated with the highest potential densities of the species within a defined area.

Vegetation mapping of the Proposed Action and Alternatives was conducted by visual examination of the 500-foot-wide survey corridors. The purpose of these surveys was to identify vegetation and land cover within the Project area. Prior to the field review, field maps were developed in GIS using CNDDB records and Gap Analysis Program (USGS) vegetation data. The vegetation layer was overlaid onto aerial photography for easy use in the field. Vegetation communities were then field-verified using a combination of direct observations and aerial photo interpretation for areas that were difficult to access. Dominant plant species and land use were also recorded. Data collected in the field was then used to refine the vegetation layer in GIS and to develop a comprehensive overview of the vegetation communities present within the Project area.

Information gathered from the literature review and reconnaissance-level field surveys were used to identify habitat for all threatened and endangered plant and wildlife species with potential to occur within the Project area. USFWS protocol surveys were conducted in 2008, 2009 and 2010 on portions of all Alternatives to assess the presence of special-status plant and wildlife species.

Prior to conducting field surveys, USFS, USFWS and BLM were consulted to determine survey needs and appropriate survey time frames. USFWS protocol surveys were conducted for the arroyo toad (*Anaxyrus californicus*) and California red-legged frog (*Rana draytonii*), federal- and State-listed plant species, Forest Service Sensitive/Watch plant species, and CNPS List 1 and 2 species. Surveys were also conducted to determine presence of and suitable habitat for California spotted owl (*Strix occidentalis occidentalis*), Joshua trees (*Yucca brevifolia*), special-status bat species, desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Spermophilus mohavensis*), and special-status riparian bird species. Additionally, desert habitat and invasive weed surveys were conducted, along with an avian risk assessment and Riparian Conservation Area surveys. (See Appendices E through N of the Biological Resources Technical Report for Survey Reports).

The accuracy of the various surveys conducted for the Proposed Action and Alternatives is limited by the following factors:

- Surveys were performed within a 500-foot-wide corridor in which construction impact areas would most likely be located. The corridor approach allowed surveys to include a majority of the potential impact areas (e.g., tower and pull sites) because in most cases, the specific impact areas were not known at the time of the surveys. However, this 500-foot corridor in most cases only allowed for surveys of portions of potential access/spur roads and staging areas, as these impact areas are expected to extend well outside of the 500-foot buffer.
- Surveys were performed on public lands and private lands where permission to access was obtained. In areas where access was not possible, other information, such as regional habitat assessment models and air photos, was used to identify suitable habitat for each species; species were assumed to be present (where appropriate); and mitigation was developed based on that assumption.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Provided below is a detailed description, including site-specific data, for vegetation types, common wildlife, special-status plants and wildlife with the potential to occur within the Project area. All the data provided below was collected during survey work conducted from 2008 to 2010 or provided by the various wildlife agencies, including the USFS, CDFG, USFWS, and BLM. The species discussed in the text below are known to occur along each Project component. For lists of species with the potential to occur please refer to Appendix G of this Final EIS/EIR.

Vegetation Community

Seventeen vegetation types were mapped within the Project area for the Proposed Action and Alternatives. Table 3.3.1-1 lists these habitat types including acres and percentage of total acreage within the Project area. Full descriptions of each of these vegetation types are provided in the Biological Resources Technical Report (POWER 2011) and vegetation maps are provided (Appendices A and B of the Biological Resources Technical Report). Because most vegetation community mapping occurred during 2008 and 2009 surveys, prior to the second edition of *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, Evens November 2009), vegetation communities were described and mapped according to Holland (1986) with the Sawyer, Keeler-Wolf (1995) equivalent provided in the Biological Resources Technical Report (POWER 2011) when applicable. Vegetation mapping conducted in 2010 was described according to Holland (1986), with the Sawyer, Keeler-Wolf (1995) equivalent for consistency with earlier surveys.

TABLE 3.3.1-1. VEGETATION COMMUNITIES PRESENT WITHIN THE BRRTP 500-FOOT SURVEY CORRIDOR

Vegetation Community	Total Acreage	Percentage of Total Habitat
Agricultural Land	2101.50	11.84%
Barren/Developed	1139.44	6.42%
Non-native Grassland	1665.30	9.38%
Chamise chaparral	1236.51	6.97%
Interior live oak chaparral	53.90	0.30%
Joshua tree woodland	1295.10	7.30%
Mojave creosote bush scrub	6240.40	35.16%
Mojave wash scrub	310.00	1.75%
Rabbitbrush scrub	147.50	0.83%
Riversidian sage scrub	1859.87	10.48%
Scrub oak chaparral	359.80	2.03%
Southern mixed chaparral	1124.50	6.34%

Vegetation Community	Total Acreage	Percentage of Total Habitat
Southern coast live oak riparian forest	47.36	0.27%
Southern cottonwood willow riparian forest	8.05	0.05%
Southern riparian scrub	83.64	0.47%
Southern sycamore alder riparian woodland	60.42	0.34%
Southern willow scrub	12.91	0.07%
Total	**17746.20**	**100%**

Special-Status Species

Thirty-five special-status wildlife species and sixty-eight special-status plant species have the potential to occur within the Project area. Special-status species are defined as any species currently listed, formally proposed for listing, or a candidate for listing as endangered or threatened under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA); any species designated as sensitive, of special concern, fully protected, or as a management indicator species by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), or BLM; any species listed by the California Native Plant Society (CNPS) as List 1 or 2; or any species otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act. Of these thirty-five special-status wildlife species and sixty-eight special-status plant species, there are thirteen wildlife and four plant species with potential to occur within the Project area that are listed, or candidates for listing, at the State and/or federal level; and one additional plant species categorized as "state rare" that has potential to occur. Appendix G of this Final EIS/EIR lists these species, their status, and their potential for occurrence. Detailed accounts for these species and locations of these species are provided in the Biological Resources Technical Report.

Non-Native and Invasive Species

Ninety-eight weed species were known to occur or were identified with the potential to occur within the ANF portion of the Project area.

Nine invasive species were mapped within the Project corridors: tocalote (*Centaurea melitensis*), rockrose (*Cistus creticus/ladanifer*), artichoke thistle (*Cynara cardunculus*), horehound (*Marrubium vulgare*), tree tobacco (*Nicotiana glauca*), smilograss (*Piptatherum miliaceum*), Russian thistle (*Salsola tragus*), Spanish broom (*Spartium junceum*), and saltcedar (*Tamarix ramosissima*). The presence of these species within the corridor(s) is of particularly high concern because the potential for them to spread is high. Fifteen invasive species were noted to occur within the Project corridors, but were not mapped due to their high frequency and known presence in the area: slender wild oat (*Avena barbata*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess brome (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), cheatgrass (*Bromus tectorum*), blessed thistle (*Cnicus benedictus*), tansy mustard (*Descurainia sophia*), filaree (*Erodium* sp.), shortpod mustard (*Hirschfeldia incana*), prickly lettuce (*Lactuca serriola*), yellow sweetclover (*Melilotus officinalis*), rabbit foot grass (*Polypogon monspeliensis*), Mediterranean grass (*Schismus barbatus*), tumble mustard (*Sisymbrium altissima/orientale*), sow thistle (*Sonchus* sp.), and rat-tail fescue (*Vulpia myuros*). Six invasive species known from previous studies were also noted or mapped on access roads to the corridors: tree-of-heaven (*Ailanthus altissima*), giant reed grass (*Arundo donax*), bull thistle (*Cirsium vulgare*), yellow star thistle (*Cirsium solstitialis*), fennel (*Foeniculum vulgare*), perennial pepperweed (*Lepidium latifolium*), and black locust (*Robinia pseudoacacia*). Five invasive species were not observed within the Project area or access roads but are believed to have a high potential of occurring after Project construction due to nearby locations and their ability to spread to disturbed areas: eupatory (*Ageratina adenophora*) , perennial sweet pea (*Lathyrus latifolius*), Himalayan blackberry (*Rubus discolor*), and puncture vine (*Tribulus terrestris*). Detailed accounts for these species and locations of these species are provided in the Biological Resources Technical Report.

Common Wildlife

Common wildlife species throughout the northern region are indicative of the high desert environments and agricultural centers of Southern California. Wildlife associated with the area includes, but is not limited to, mule deer (*Odocoileus hemionus*), coyotes (*Canis latrans*), round-tailed ground squirrels (*Spermophilus tereticaudus*), kangaroo rats (*Dipodomys* sp.), and muskrats (*Ondatra zibethicus*). Birds include waterfowl, red-tailed hawks (*Buteo jamaicensis*), falcons (*Falco* sp.), common ravens, turkey vultures (*Cathartes aura*), western scrub-jay (*Aphelocoma californica*), quail (*Callipepla* sp.) and mourning dove (*Zenaida macroura*) (CDFG 2010, USFS 2005). Reptile species observed during surveys or expected to occur include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*S. magister*), desert iguana (*Dipsosaurus dorsalis*), and western rattlesnake (*Crotalus viridis*). Chuckwallas (*Sauromalus ater*), red racers (*Coluber constrictor*), common kingsnakes (*Lampropeltis getula*), gopher snakes (*Pituophis catenifer*), and western whiptail lizards (*Aspidoscelis tigris*) are also commonly found in the northern region of the Project area. Species that occur on the ANF include coyote, gray fox (*Urocyon cinereoargenteus*), California ground squirrel (*S. beecheyi*), western gray squirrel (*Sciurus griseus*), and Botta's pocket gopher (*Thomomys bottae*). The diverse assemblage of vegetation communities on the ANF provides suitable breeding, nesting, and foraging habitat for a relatively exhaustive number of bird species, including Steller's jay (*Cyanocitta stelleri*), wrentit (*Chamaea fasciata*), mountain chickadee (*Poecile gambeli*), acorn woodpecker (*Melanerpes formicivorus*), and dark-eyed junco (*Junco hyemalis*). Many perennial and intermittent drainages occur on the ANF and provide suitable breeding habitat for several amphibian species, including Pacific tree frog (*Pseudacris hypochondriaca* [*regilla*]), California tree frog (*Pseudacris cadaverina*), Monterey ensatina (*Ensatina eschscholtzii eschscholtzii*), and coast range newt (*Taricha torosa torosa*).

Wildlife Movement Corridors

Wildlife movement corridors can reduce the effects of habitat fragmentation by allowing animals to move between core habitats, replenishing depleted populations, maintaining diversity in the gene pool, and contributing to plant diversity by transporting seed and pollen. Corridors also provide escape routes from fire, predators and human disturbances, and serve as travel pathways for accessing food, water, and mates. Wildlife movement can also have negative effects, such as facilitation of the passage of disease, introduction of invasive species, introduction of "poorly suited" genes, and increased predation on depleted populations. The benefits of increased wildlife movement, however, are generally accepted as outweighing these potential negative impacts.

These linkages among habitat types can extend for miles from primary habitat areas and occur on a large scale throughout California. The northern area of the Project is located within the Mojave Desert. This portion of the desert is surrounded by agricultural land and sporadic areas of residential development. Species can move under the current ROW; however, the access roads used to maintain the transmission line also increase access by humans. Suitable cover from predators is also an important aspect of wildlife movement, such as for kit fox, which require passages that are large enough to accommodate larger body sizes. Smaller wildlife species, such as American badger, can use culverts and other smaller passages. Other aspects of land use, including agricultural activity and proximity to developed areas, can also reduce the amount of movement that occurs through a corridor. Under current conditions, there are a number of barriers that may restrict the movement of terrestrial wildlife species within and through the BRRTP area. These barriers include agricultural activities, major highways and roads, rail lines, and existing development such as industrial, commercial, and residential areas. Existing roads present barriers to terrestrial wildlife, and the removal of natural vegetation by agricultural activities has reduced suitable cover or disrupted the land surface.

Unlike the urbanized and agricultural areas to the north and south, the central end of the Proposed Action and Alternatives crosses the ANF. The ANF provides an extensive area containing a mosaic of relatively undeveloped habitat that can serve as core areas for the wildlife species present. This area of the Proposed Action and Alternatives has minimal human disturbance and, according to the South Coast Linkage Project and California Essential Habitat Connectivity Project, provides a wildlife movement corridor for large mammals and birds moving north to south or vice versa (Penrod et. al 2004, Spencer et. al 2010). Terrestrial movement in the north-south direction, particularly along San Francisquito Creek and Bouquet Creek, is less restricted due to the presence of aquatic and riparian areas along these creeks. As the creeks proceed south, the developed areas greatly inhibit the movement of terrestrial wildlife species between core habitat areas to the south.

There are several existing barriers that affect the east-west movement of terrestrial wildlife across the BRRTP area. Existing barriers include I-5 to the west and California Highway 14 to the east. Highway 14, located immediately outside the BRRTP area, boundary, is the most significant barrier. To cross this barrier, terrestrial wildlife would need to negotiate heavy traffic. On the east side the BRRTP area boundary, I-5 presents another major barrier to terrestrial wildlife movement. Only limited options exist for east-west terrestrial wildlife movement across these barriers and they include culverts, overpasses, and underpasses.

Management Indicator Species

Five Management Indicator Species (MIS) identified in the ANF Land and Resource Management Plan (LRMP) (USDA 2005) occur within the BRRTP study area. Certain species, known as MIS, are identified as indicators of the health and function of the forest ecosystem in response to USFS management activities. Project-level effects on MIS are analyzed and disclosed as part of the environmental analysis under the NEPA.

MIS are selected because their population changes are believed to indicate the effects of management activities (36 CFR 219.19(a) (1), 1982) and to serve as a focus for monitoring (36 CFR 219(a) (6), 1982). The regulation (1982 Planning Rule) required the selection of vertebrate and/or invertebrate species as MIS but did not preclude the selection of other life forms.

Vascular plants are included as MIS because these species are often wide-ranging and responsive to landscape-level stressors.

MIS that occur in the Project area include mule deer, mountain lion (*Puma concolor*), arroyo toad, song sparrow (*Melospiza melodia*), and California spotted owl. A review was conducted to determine whether the Project area was within known or potential habitat for each MIS. Table 3.3.1-2 describes the MIS, their associated Management Indicators, measure, and relevance to the Project within the ANF. See the *Management Indicator Species Analysis for the Barren Ridge Renewable Transmission Project* in Appendix I of this Final EIS/EIR for further details and analysis of impacts to MIS in the Project area.

TABLE 3.3.1-2. MANAGEMENT INDICATOR SPECIES SELECTED FOR PROJECT EVALUATION

MIS Species	Indicators of Management	Measure	Relevance to Project
Mule deer	Healthy diverse habitats	Trend in abundance and/or habitat condition	Occurs in Project area
Mountain lion	Habitat fragmentation	Trend in distribution, movement, and/or habitat conditions	Occurs in Project area
Arroyo toad	Aquatic habitat	Trend in abundance and/or habitat condition	Occurs in Project area
Song sparrow	Riparian habitat	Trend in abundance and/or habitat condition	Occurs in Project area
California spotted owl	Montane conifer forest	Occupied territories and/or habitat condition	Occurs in Project area

Biological Soil Crusts

Biological soil crusts, also known as cryptobiotic crusts, are the community of organisms living at the surface of arid soils. Major components include cyanobacteria, algae, fungi, mosses, liverworts, and lichens. Biological soil crusts increase soil stability; reduce wind and water erosion; increase water infiltration; provide nutrient contributions; increase soil fertility by fixing atmospheric nitrogen and contributing to soil organic matter; enhance seedling germination and plant growth; and function as living mulch by retaining soil moisture and discouraging annual weed growth (Belnap et al. 2001).

Biological soil crusts are found in arid soils around the globe in both hot and cold climates. They occur in haparral and desert vegetation communities throughout Southern California on intact, relatively undisturbed soils. Biological soil crusts occur throughout the BRRTP study area within chamise chaparral, interior live oak chaparral, joshua tree woodland, Mojave creosote bush scrub, Riversidian sage scrub, scrub oak chaparral, and southern mixed chaparral with relatively undisturbed soils.

While no general practices or mitigation measures are in place to specifically address the protection of cryptobiotic crusts, there are several that would reduce short-term or long-term effects to these communities. These include GP-7, GP-24, GP-25, GP-33, GP-34, GP-35, GP-42, GP-43, and GP-44, as well as mitigation measures AIR-2a (Implement construction fugitive dust control plan), VIS-12 (Minimize vegetation clearing), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), and BIO-13 (Protect special-status plant species and their habitat).

Inventory Results

To provide baseline conditions for each component of the Proposed Action and Alternatives, the dominant soil type, water and habitat characteristics, species present or the potential to occur is described for each. The temporary and permanent ground disturbance is also provided to evaluate potential impacts to the biological resources. For conventional ground construction of the lattice towers, the temporary disturbance estimates take into account structure staging area, and sites for pulling and tensioning, sleeving and stringing, guard structures, material staging, and concrete batch plants. To minimize permanent impacts, after the construction of the BRRTP all the temporary areas and roads greater than 16 feet wide would be re-vegetated. The permanent disturbance estimates take into account the structures, spur and access roads. Each structure would have a disturbance area of 60 by 60 ft (0.08 acre). Each mile would have approximately five towers per mile, for a total disturbance of 0.2 acre per mile. For the ground disturbance summary please refer to Chapter 2.

The following sections describe in detail the biological resources present within each Alternative.

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of approximately 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV transmission line structures (towers 1-1 through 12-1). Approximately 300 feet of BLM-managed public lands and four miles of USFS lands would be traversed; however, the new circuit would not require new or additional ROW.

The dominant plant communities are chamise chaparral, Riversidian sage scrub, southern mixed chaparral, and development (POWER 2011; see Biological Resources Technical Report Appendix F).

Surveys conducted along the new 230 kV circuit corridor by a POWER botanist in the spring of 2010 detected slender mariposa lily (*Calochortus clavatus gracilis*) and short-joint beavertail (*Opuntia basilaris brachyclada*) along access roads in both burned and unburned chaparral. Pierson's morning glory was also detected along the access roads. Although it was once listed as Sensitive by the USFS, Peirson's morning-glory (*Calystegia peirsonii*) has subsequently been found to be common on ANF lands, and the USFS does not typically map or monitor populations (POWER 2011; see Biological Resources Technical Report). However, since only one population was observed along the new 230 kV circuit, USFS botanist Katie VinZant chose to map the population.

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) (9 individuals)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) (13 individuals)

Prior to field surveys, 53 special-status plant species were determined to have potential to occur within the proposed new 230 kV circuit corridor, including nine species with moderate potential to occur and 12 species with low to very low potential to occur. Special-status species are defined as any species currently listed, formally proposed for listing, or a candidate for listing as endangered or threatened under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA); any species designated as sensitive, of special concern, fully protected, or as a management indicator species by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), or BLM; any species listed by the California Native Plant Society (CNPS) as List 1 or 2; or any species otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act. Suitable habitat for these species may occur within chaparral and Riversidian sage scrub vegetation. All of these were searched for during 2010 protocol- level surveys at a time of year when they are identifiable in the field. However, surveys along the new 230 kV circuit corridor were constricted to alongside existing roads and towers, as other disturbance area locations are unknown at this time. Therefore, there is a high likelihood that other rare plant species populations may occur within this corridor.

The 13 special-status plants that are likely to occur within the new 230 kV circuit corridor include:

- Chaparral ragwort (*Senecio aphanactis*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Greata's aster (*Symphyotrichum greatae*)
- Nevin's barberry (*Berberis nevinii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Ross's pitcher sage (*Lepechinia rossii*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- Slender-horned spineflower (*Dodecahema leptoceras*)

Weed species located within the new 230 kV circuit corridor include:

- Blessed thistle (*Cnicus benedictus*)
- Cheatgrass (*Bromus tectorum*)
- Common horehound (*Marrubium vulgare*)
- Rat-tail fescue (*Vulpia myuros*)
- Red brome (*Bromus madritensis* ssp. *rubens*)
- Ripgut brome (*Bromus diandrus*)
- Slender wild oat (*Avena barbata*)
- Soft chess brome (*Bromus hordeaceus*)
- Wild oat (*Avena fatua*)

Based on the presence of recorded occurrences, only one special-status species, California condor (*Gymnogyps californianus*), is believed to occur immediately within the impact corridor of the new 230 kV circuit.

Additional special-status wildlife species are believed to be present within one mile of the new 230 kV circuit impact corridor or to have the potential to occur within it, but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Arroyo chub (*Gila orcuttii*)
- Bald eagle (*Haliaeetus leucocephalus*)
- California red-legged Frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Pallid Bat (*Antrozous pallidus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Arroyo toad (*Anaxyrus californicus*)
- California legless lizard (*Anniella pulchra*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Peregrine falcon (*Falco peregrinus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western spadefoot toad (*Spea hammondii*)
- White-tailed kite (*Elanus leucurus*)

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative "snapshot" of bird use within the Project area. Two surveys were conducted along this corridor in fall 2010, and three surveys in spring 2011. Between both survey periods, a combined total of 94 avian species was positively detected and identified, with an estimated total of 2,348 individual birds detected. With the nearby Castaic Lagoon and Castaic Lake, the new 230 kV circuit corridor also supports a relatively high number of waterbirds in areas adjacent to it, with 22 waterbird species positively identified. The new 230 kV circuit corridor partially overlaps with Alternative 1 and shares some of the same detection data with it. It is possible that even more avian species were incidentally observed along this Project component during other Project surveys, and because these five survey dates presented only a snapshot of activity, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

Reconductoring of BR-RIN Transmission Line

The upgrade of the existing BR-RIN would involve approximately 13 miles of USFS lands and four miles of BLM-managed public lands.

The proposed route is located within the Sierra Pelona-Mint Canyon eco-region. The eco-region is characterized by mid-elevation foothills and urban development. The soils are well drained and have xeric characteristics; underlying rock is sedimentary with portions of granite (POWER 2011; see Biological Resources Technical Report). Significantly, Santa Ana winds formed in the desert advance toward the low pressure of the Coastal Ranges, and sweep through the Santa Clarita Valleys and Los Angeles Basin of this eco-region. Annual precipitation in the region ranges from 12 to 20 inches.

The dominant plant species are chamise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos glauca*), ceanothus (*Ceanothus* spp.), toyon (*Heteromeles arbutifolia*), coast live oak (*Quercus agrifolia*), and coastal sage scrub species including California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*). black sage (*Salvia mellifera*), and thick-leaf yerba santa (*Eriodictyon crassifolium*) (POWER 2011; see Biological Resources Technical Report Appendix F).

Two special-status plant species were within the reconductoring corridor during surveys conducted in 2008, 2009, and 2010 (POWER 2011):

- Short-joint beavertail (84 individuals)
- Slender mariposa lily (4,081 individuals)

The 59 special-status plant species that are likely to occur within the corridor include:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Greata's aster (*Symphyotrichum greatae*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)

- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Based on the presence of recorded occurrences, the following wildlife species are believed to occur immediately within the impact corridor of the reconductoring corridor:

- American badger (*Taxidea taxus*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Desert tortoise (*Gopherus agassizii*)

Special-status wildlife species are believed to be present within one mile of the corridor, or to have the potential to occur within it, but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Arroyo chub (*Gila orcuttii*)
- Burrowing owl (*Athene cunicularia*)
- California condor (*Gymnogyps californianus*)
- California red-legged frog (*Rana draytonii*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Golden eagle (*Aquila chrysaetos*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Mountain plover (*Charadrius montanus*)
- Pallid bat (*Antrozous pallidus*)
- Peregrine falcon (*Falco peregrinus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Swainson's hawk (*Buteo swainsoni*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Two-striped Garter Snake (*Thamnophis hammondii*)
- Western Mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Western Spadefoot toad (*Spea hammondii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- White-tailed kite (*Elanus leucurus*)

USFWS-designated critical habitat for the coastal California gnatcatcher (*Polioptila californica californica*) is located on the southern portion of the reconductoring component of the Proposed Action and Alternatives. Direct and indirect impacts could occur from accessing this transmission line for maintenance and construction activities. Impacts to this species would be considered significant due to its protection under ESA and would require formal consultation with USFWS.

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. Two surveys were conducted along the reconductoring component in fall 2010, and three surveys in spring 2011. Between both survey periods, a combined total of 92 avian species was positively detected and identified, with an estimated total of 3,342 individual birds detected. The reconductoring component shares the same corridor with all of Alternative 2 and therefore shares the same avian detections with this alternative for the point count data. In addition to this area, it also continues south for another portion that is not shared with any other Project components. Along with the species detected during the avian point count surveys, it is also possible that even more avian species were incidentally observed along this Project component during other Project surveys, and because these five survey dates presented only a snapshot of activity in the survey areas, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

New Haskell Canyon Switching Station

All of the vegetation communities and cover types occurring within the proposed 2.7-acre development footprint at the proposed Haskell Canyon Switching Station site would be impacted by the construction of the proposed switching station. The station would be 500 feet by 600 feet to accommodate the necessary equipment, such as steel support structures, circuit breakers, disconnect switches, and associated equipment, and a relay house and control house containing control and protective relaying equipment. The relay and control houses would each be 30 feet long by 12 feet wide by 10 feet high and constructed of gray concrete block. The station yard would include a paved internal access road 16 feet wide, and would be enclosed by chain-link fencing with barbed-wire extension for security. The station yard would include a paved internal access road 16 feet wide, a 100 foot by 100 foot gravel parking area, and would be enclosed by chain-link fencing with barbed-wire extension for security.

The dominant plant community within the Haskell Canyon Switching Station footprint is Riversidian Sage Scrub. The surrounding communities include chamise chaparral and development (POWER 2011; see Biological Resources Technical Report Appendix F). Surveys conducted by a POWER botanist in the spring of 2009 detected short-joint beavertail cactus approximately 0.25 mile south from the switching station site. In addition, the special-status species listed below for Alternative 2 have the potential to occur in the Haskell Canyon Switching Station area.

There are 58 special-status plant species that have the potential to occur within the Haskell Canyon Switching Station footprint:

- Alkali mariposa lily (*Calochortus striatus*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- California androsace (*Androsace* elongata ssp. *acuta*)
- Chaparral ragwort (*Senecio aphanactis*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Desert cymopterus (*Cymopterus deserticola*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California satintail (*Imperata brevifolia*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Creamy blazing star (*Mentzelia tridentata*)
- Delicate bluecup (*Githopsis tenella*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)

- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Weed species potentially located in the Haskell Canyon Switching Station footprint are:

- Cheatgrass (*Bromus tectorum*)
- Hoary brome (*Bromus hordeaceus*)
- Red brome (*Bromus madritensis*)
- Spanish broom (*Spartium junceum*)
- Tansy mustard (*Descurainia sophia*)
- Filaree (*Erodium cicutarium*)
- Indian hedgemustard (*Sisymbrium orientale*)
- Ripgut brome (*Bromus diandrus*)
- Tall tumblemustard (*Sisymbrium altissimum*)
- Tocalote (*Centaurea melitensis*)

The four special-status wildlife species that are potentially located in the Haskell Canyon Switching Station footprint include:

- Coast horned lizard (*Phrynosoma coronatum blainvillii*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Pallid bat (*Antrozous pallidus*)
- White-tailed kite (*Elanus leucurus*)

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. While no surveys were conducted on the specific proposed switching station site, three surveys were conducted in fall 2010 and two surveys in spring 2011 at two sites nearby and in close proximity to the site. Between both survey periods, a combined total of 35 avian species was positively detected and identified at these two points, with an estimated total of 187 individual birds detected. It is possible that more avian species were incidentally observed at or near the proposed switching station site during previous surveys conducted in this area, and because these survey dates presented only a snapshot of activity in the survey area, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

Expansion of Barren Ridge Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet for a total station size of 485 feet by 500 feet (5.7 acres). The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area. Expansion of the existing switching station would be very similar to the construction of the Haskell Canyon Switching Station. Expansion would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment.

Habitat assessment surveys were conducted in 2008. Surveys were conducted on foot in native plant communities surrounding the existing station ROW, as access allowed. Particular attention was given to any remaining undisturbed habitat pockets, with the assumption that undisturbed areas provide higher quality habitat than those altered by anthropogenic activity. Some highly developed areas were not surveyed, due to the absence of characteristics able to support the species of interest. To gain a sense of wildlife activity levels in proximity to the proposed expansion of the Barren Ridge Switching Station, biologists documented any observed sensitive wildlife species and evaluated habitat for suitable characteristics to support State or federal protected species. The primary species to be assessed during the survey included desert tortoise, Mohave ground squirrel, desert kit fox (*Vulpes macrotis arsipus*), and burrowing owl (*Athene cunicularia*).

Vegetation within the survey area was classified using Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* as a guide and primary reference (Holland 1986). Holland's system was used because of its habitat-based approach and because it includes all of the general vegetation communities found within the switching station footprint and can be applied when most data used in classification are qualitative, as is the case for this Project. *A Manual of California Vegetation* (Sawyer, Keeler-Wolf 1995) was used as a reference and the equivalent was provided in the Biological Resources Technical Report (POWER 2011) when applicable. *A Manual of California Vegetation*, Second Edition (Sawyer, Keeler-Wolf, Evens 2009) was released after vegetation mapping was conducted for the majority of the BRRTP. Mojave creosote bush scrub (Holland 1986) is the predominant vegetation type at the Barren Ridge Switching Station. It is composed of widely spaced evergreen and drought-deciduous shrubs dominated by creosote bush (*Larrea tridentata*), burro brush (*Ambrosia dumosa*), and cheesebush (*Hymenoclea salsola*) as well as various cactus (*Opuntia* spp., *Cylindropuntia* spp.) species.

No special-status plants were located in the Barren Ridge Switching Station area. However, because not all areas of potential impact within the area were surveyed at the protocol level, additional special-status plant species could be present. This is based on known occurrence locations and/or the availability of suitable habitat.

The 10 special-status plants that are likely to occur near or within the Barren Ridge Switching Station footprint include:

- Alkali mariposa lily (*Calochortus striatus*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Mojave tarplant (*Deinandra mohavensis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Red Rock tarplant (*Deinandra arida*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Creamy blazing star (*Mentzelia tridentata*)
- Pale-yellow layia (*Layia heterotricha*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- White pygmy-poppy (*Canbya candida*)

Weed species located in the Barren Ridge Switching Station footprint are:

- Cheatgrass* (*Bromus tectorum*)
- Red brome* (*Bromus madritensis*)
- Indian hedgemustard (*Sisymbrium orientale*)

* Indicates species that were too widespread and numerous to map.

The special-status wildlife species that are potentially located in the Barren Ridge Switching Station footprint include:

- Desert tortoise (*Gopherus agassizii*)
- Le Conte's thrasher (*Toxostoma lecontei*)

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. Two surveys were conducted at the Barren Ridge Switching Station in spring 2011. Between both surveys, a combined total of 11 avian species was positively detected and identified, with an estimated total of 52 individual birds detected. It is possible that more avian species were incidentally observed at or near the switching station during previous surveys conducted in this area, and because these two survey dates presented only a snapshot of activity in the survey area, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

Alternative 1 230 kV transmission line would cross 83 miles and would require 7.3 miles of new access road. The majority of the Alternative 1 transmission line area within the ANF consists of dense, impenetrable chaparral, with very steep slopes. The Project corridors in the northern region would lie within the Mojave Ecotype characterized by Mojave creosote bush scrub and Mojave wash scrub with scattered and isolated rural residential properties and agricultural fields. The level of precipitation in this ecotype ranges from four to ten inches annually. Dry lakes, or playas, occur in the arid northern portion of the Alternative 1 area. Within the Antelope-Fremont Valleys watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Armargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams. The Alternative 1 transmission line would parallel the First and Second Los Angeles Aqueducts in the northernmost portion of the Project area, and both aqueducts occur within the study corridor.

In the northern end of the Project area, human occupation of the Antelope Valley has significantly altered these local habitats and wildlife resources, as agricultural, military, and development activities have resulted in an overall reduction of biodiversity and population of wildlife species within the terrestrial habitats.

The southern end of the Alternative 1 transmission line within the ANF would be located in steep, mountainous terrain of the eastern Transverse Range, including the Sierra Pelona Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands. The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

Soil

The soils predominantly comprise alluvial plain and pediment with small hills within the northern end of Alternative 1 (POWER 2011; see Biological Resources Technical Report). For the southern end of the Alternative 1 transmission line, the ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands.

Vegetation

Eleven different vegetation communities were mapped within the northern end of the Alternative 1 transmission line corridor. Full descriptions of each of these habitats are provided in Section 4.1 of the Biological Resources Technical Report. The most common vegetation communities are Mojave Creosote Bush Scrub and Riversidian Sage Scrub at lower elevations (USFS 2005, Sawyer 1993, Holland 1986). Vegetation communities along the northern portion of the Alternative 1 transmission line within the ANF include Mojavean juniper woodland and scrub and southern mixed haparral with *Juniperus californica* (California juniper) and *Ceanothus* spp. (ceanothus) dominating the overstory.

Within the central and southern end of the Alternative 1 transmission line, the vegetation composition is predominantly drought tolerant, evergreen shrubs. The general eco-region is dominated by southern mixed haparral with a sparse mixture of deciduous broadleaf trees and conifers, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin (POWER 2011; see Biological Resources Technical Report). Overstory plant species within the region include California juniper (*Juniperus californica*), foothill pine (*Pinus sabiniana*), oak species (*Quercus* spp.), ceanothus, big berry manzanita, and chamise.

Biological soil crusts are present within openings in coastal sage scrub, chaparral, Mojave desert scrub, and Joshua tree woodland on undisturbed soils throughout Alternative 1.

Special-Status Species

There are two special-status plant species known to occur within the Alternative 1 transmission line impact corridor:

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Total of 49 individuals.
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*). Total of 28 individuals.

As not all areas of potential impact within the Alternative 1 transmission line corridor were surveyed, an additional 52 special-status plant species could be present within the impact corridor. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)

- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- White pygmy-poppy (*Canbya candida*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Non-Native and Invasive Plant Species

In the northwestern corner of the Alternative 1 transmission line corridor on the ANF, along Forest Road 8N01, slender wild oat, wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, tocalote, tansy mustard (*Descurania sophia*), filaree, shortpod mustard, prickly lettuce, smilo grass (*Piptatherum junceum*), Mediterranean grass, tumble mustard, sow thistle, and rat-tail fescue were common, but were not mapped due to their abundance. However, Russian thistle, Spanish broom, saltcedar, giant reed grass, yellow star thistle, fennel, perennial pepperweed, tree tobacco, and black locust were mapped on ANF lands within the Alternative 1 corridor, as they occur in more distinct populations. One small occurrence of Indian hedgemustard (*Sisymbrium orientale*) was mapped along BLM lands on the Alternative 1 transmission line corridor (POWER 2011; see Biological Resources Technical Report Appendix F).

There are three special-status wildlife species that are known to occur within the Alternative 1 transmission line impact corridor:

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)
- California condor (*Gymnogyps californianus*)

Potential coastal California gnatcatcher habitat was observed along the Alternative 1 transmission line within the ANF (POWER 2009a), and several individuals were detected during bird use count surveys conducted by POWER biologists in fall 2010 and spring 2011. While this species is expected to be present in the general Project area, it was not detected within the ROW or what is referred to as the impact corridor, which is 250 feet on either side of the proposed centerline.

Additional special-status wildlife species are believed to be present within one mile of the Alternative 1 transmission line impact corridor but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Bald eagle (*Haliaeetus leucocephalus*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Golden eagle (*Aquila chrysaetos*)
- Burrowing owl (*Athene cunicularia*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)

- Le Conte's thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Pallid bat (*Antrozous pallidus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Swainson's hawk (*Buteo swainsoni*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Western mastiff Bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Mountain plover (*Charadrius montanus*)
- Peregrine falcon (*Peregrine falcon*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Tricolored blackbird (*Agelaius tricolor*)
- Western red bat (*Lasiurus blossevillii*)
- White-tailed kite (*Elanus leucurus*)

Migratory Birds

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. Two surveys were conducted along this alternative in fall 2010, and three surveys in spring 2011. Between both survey periods, a combined total of 94 avian species was positively detected and identified, with an estimated total of 2,065 individual birds detected. Alternative 1 partially overlaps with the new 230 kV circuit corridor and shares some of the same detection data with that corridor. In addition, it shares the same corridors through a portion of its northern end with Alternatives 2, 2a, and 3. Because avian point count surveys were only conducted along the Proposed Action, a large portion of Alternative 1 in the Angeles National Forest and Antelope Valley was not surveyed during these efforts. Therefore, there are likely to be additional species that use the Alternative 1 corridor regularly or periodically that were not represented during these surveys. It is also possible that even more avian species were incidentally observed along this alternative corridor during other Project surveys, and because these five survey dates presented only a snapshot of activity in the survey areas, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative

The Alternative 2 230 kV transmission line would start in the Mojave Ecotype, characterized by desert salt brush with scattered and isolated rural residential properties and agricultural fields. Dry lakes, or playas, occur in the arid northern portion of the Project area. The level of precipitation in this ecotype ranges from 4 to 10 inches annually. Within the Antelope-Fremont Valleys watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Armargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams.

As the Alternative 2 transmission line would head south, it would cross through the ANF. The area is characterized by steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern

Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is bisected by granitic uplands (POWER 2011; see Biological Resources Technical Report). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

Soils
In the northern portion of the Alternative 2 transmission line corridor, the soils predominantly comprise alluvial plain and pediment with small hills (POWER 2011; see Biological Resources Technical Report). The southern end of the Alternative 2 transmission line corridor is considered the Northern Transverse Range ecotype and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands.

Vegetation
Within the northern eco-region boundary of the Alternative 2 transmission line corridor, the most common vegetation communities include Mojave creosote bush scrub and Riversidian sage scrub at lower elevations, with Mojavean juniper woodland and scrub and southern mixed chaparral as the elevation increases (USFS 2005, Sawyer 1993, Holland 1986, POWER 2011; see Biological Resources Technical Report). Where the transmission line would cross through the ANF, the eco-region is dominated by southern mixed chaparral with a sparse mixture of deciduous broadleaf trees and conifers, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin. Dominant overstory plant species throughout the Alternative 2 transmission line area within Mojave creosote bush scrub and Joshua tree woodland include Creosote bush and Joshua tree. As elevation increases in the foothills California juniper, foothill pine, oak species, ceanothus, big berry manzanita, and chamise dominate the overstory. There are three major drainages and several small drainages that originate from the foothills of the ANF and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small distributaries. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

Biological soil crusts are present within openings in coastal sage scrub, chaparral, Mojave desert scrub, and Joshua tree woodland on undisturbed soils throughout Alternative 2.

Special-Status Species
There are two special-status plant species that are known to occur within the Alternative 2 transmission line impact corridor:

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Total of 84 individuals.
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*). Total of 4,081 individuals.

As not all areas of potential impact within the Alternative 2 transmission line corridor were surveyed, an additional 58 special-status plant species could be present within the impact corridor. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)

- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Gabriel bedstraw (*Galium grande*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- White pygmy-poppy (*Canbya candida*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Due to the existing access along the Alternative 2 transmission line, more biological data was collected along this corridor relative to the other Alternatives. Detailed vegetation mapping and special-status plant and wildlife surveys were conducted along this Alternative from 2008 through 2010, including surveys along access roads.

There are two special-status wildlife species that are known to be present within the Alternative 2 transmission line impact corridor:

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

Additional special-status wildlife species are believed to be present within one mile of the Alternative 2 transmission line impact corridor but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Arroyo chub (*Gila orcuttii*)
- California condor (*Gymnogyps californianus*)
- California Spotted Owl (*Strix occidentalis occidentalis*)
- Coastal Rosy Boa (*Lichanura trivirgata roseofusca*)
- Golden Eagle (*Aquila chrysaetos*)
- Le Conte's Thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mountain plover (*Charadrius montanus*)
- Burrowing owl (*Athene cunicularia*)
- California red-legged frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Pallid bat (*Antrozous pallidus*)

- Peregrine falcon (*Falco peregrinus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Swainson's hawk (*Buteo swainsoni*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Western spadefoot toad (*Spea hammondii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- White-tailed kite (*Elanus leucurus*)

The Alternative 2 transmission line would parallel San Francisquito Creek for five miles and cross the creek south of the unincorporated community of Green Valley. The point the proposed centerline would cross the creek is from ridgeline to ridgeline. However, it is important to note that all designated USFWS wildlife habitat and USFS-modeled GIS habitat near the Alternative 2 transmission line is located along San Francisquito Creek. For the five miles that the transmission line would parallel San Francisquito Creek, the USFS-modeled habitat is well outside the 500-foot proposed transmission line corridor. During several field surveys, it was determined that amphibian species would not be able to access the Alternative 2 transmission line due to steep ridgeline that would separate the USFS-modeled habitat and transmission line.

Non-Native and Invasive Plant Species

Weed species known to occur along the Alternative 2 transmission line corridor within the ANF are:

- Blessed milkthistle (*Silybum marianum*)
- Blessed thistle (*Cnicus benedictus*)
- Cheatgrass (*Bromus tectorum*) *
- Filaree (*Erodium cicutarium*) *
- Hoary brome (*Bromus hordeaceus*) *
- Horehound (*Marrubium vulgare*)
- Indian hedgemustard (*Sisymbrium orientale*)
- Mediterranean grass (*Schismus barbatus*) *
- Prickly Russian thistle (*Salsola tragus*)
- Rabbit-foot grass (*Polypogon monspeliensis*)
- Rat-tail fescue (*Vulpia myuros*) *
- Red brome (*Bromus madritensis*) *
- Ripgut brome (*Bromus diandrus*) *
- Rock rose (*Cistus creticus*)
- Rock rose (*Cistus ladanifer*)
- Saltcedar (*Tamarix ramosissima*)
- Shortpod mustard (*Hirschfeldia incana*) *
- Smilograss (*Piptatherum miliaceum*) *
- Spanish broom (*Spartium junceum*)
- Sweetclover (*Melilotus officinalis*) *
- Tall tumblemustard (*Sisymbrium altissimum*) *
- Tansy mustard (*Descurainia sophia*) *
- Tocalote (*Centaurea melitensis*) *
- Tree tobacco (*Nicotiana glauca*)
- Wild oats (*Avena* sp.) *

* Indicates species that were too widespread and numerous to map.

Migratory Birds

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. Two surveys were conducted along this alternative in fall 2010, and three surveys in spring 2011. Between both survey periods, a combined total of 82 avian species was positively detected and identified, with an estimated total of 2,369 individual birds detected. Alternative 2 shares the same corridors through a portion of its northern end with Alternatives 1, 2a, and 3. It is possible that even more avian species were incidentally observed along this alternative corridor during other Project surveys, and because these five survey dates presented only a snapshot of activity in the survey areas, it is likely that, on average, more or less bird species do use this area than were detected during the point count survey dates.

A temporary transmission line would be required for construction of Alternative 2 around the unincorporated community of Green Valley to maintain power while the permanent structures are being upgraded. This temporary transmission line would be 7.5 miles long and extend from near LADWP's Power Plant 1 to just north of Johnson Road in the unincorporated community of Elizabeth Lake, and would constitute 4.18 acres of temporary disturbance. The Alternative corridor is located almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Although there are some areas of agricultural and southern mixed chaparralhabitat types where the temporary transmission line would leave the road, overall habitat quality is estimated to be low. Potential habitat is present to support southwestern willow flycatcher (*Empidonax traillii extimus*), arroyo toad, California red-legged frog, least Bell's vireo (*Vireo bellii pusillus*), and unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), but there are no known special-status wildlife occurrences or wildlife corridors in this area (POWER 2011; see Biological Resources Technical Report).The special-status plant species that have a potential to be impacted by this temporary line are:

- Alkali mariposa lily (*Calochortus striatus*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)

- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Nevin's barberry (*Berberis nevinii*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Peirson's lupine (*Lupinus peirsonii*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Gabriel bedstraw (*Galium grande*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern jewel flower (*Streptanthus campestris*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Ross's pitcher sage (*Lepechinia rossii*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Southern California black walnut (*Juglans californica*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- White pygmy-poppy (*Canbya candida*)

The non-native plant species that are known or likely to be present are the same as those species listed above for the Alternative 2 transmission line. The temporary line would partially fall within the San Andreas Rift Zone SEA and the Santa Clara River SEA. It is estimated that 81 trees would require trimming or removal along this route within 28 distinct sections of road. These mostly consist of *Quercus* or *Pinus* species. Twenty-seven of these trees are within NFS boundaries.

Alternative 2a

The Alternative 2a 230 kV transmission line would run along the same alignment as the Alternative 2 transmission line until it reaches the unincorporated community of Green Valley. This localized Alternative would then skirt around the unincorporated community of Green Valley. The Alternative 2a transmission line would start in the Mojave Ecotype, characterized by Mojave creosote bush scrub and Mojave wash scrub with scattered and isolated rural residential properties and agricultural fields. The level of precipitation in this ecotype ranges from 4 to 10 inches annually. The soils predominantly comprise alluvial plain and pediment with small hills (POWER 2011; see Biological Resources Technical Report). Dry lakes, or playas, occur in the arid northern portion of the Project area. Within the Antelope-Fremont Valleys watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Armargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams.

As the Alternative 2a transmission line would head south, it would cross through the ANF. The area is characterized by steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (POWER 2011; see Biological Resources Technical Report). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transcends into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

Vegetation

Within the northern eco-region boundary of the Alternative 2a transmission line corridor, the most common vegetation include Mojave creosote bush scrub and Riversidian sage (USFS 2005, Sawyer 1993, Holland 1986, POWER 2011; see Biological Resources Technical Report). Where the Alternative 2a transmission line would cross through the ANF, the eco-region is dominated by various types of chaparraldepending upon slope and aspect, including southern mixed chaparral, scrub oak chaparral, chamise chaparral, and interior live oak chaparral, with a sparse deciduous broadleaf trees and conifers. Dominant overstory plant species include foothill pine, oak species, ceanothus, big berry manzanita, and chamise. There are several significant riparian areas that may be impacted by this Alternative, including Burns Canyon, South Portal Canyon, Tule Canyon, and Ruby Clearwater Canyon. Most reaches of these natural stream channels have the ability to support riparian areas and function as wildlife corridors.

Biological soil crusts are present within openings in coastal sage scrub, chaparral, Mojave desert scrub, and Joshua tree woodland on undisturbed soils throughout Alternative 2a.

Special-Status Species

There are two special-status plant species that are known to occur within the Alternative 2a transmission line impact corridor:

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Total of 84 individuals.
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*). Total of 4,081 individuals.

As not all areas of potential impact within the Alternative 2a transmission line corridor were surveyed, an additional 61 special-status plant species could be present within the impact corridor. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Alkali mariposa lily (*Calochortus striatus*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Braunton's milk-vetch (*Astragalus brauntonii*)

- Calico monkeyflower (*Mimulus pictus*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's Yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)

- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Urn-flowered alumroot (*Heuchera elegans*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)

There are two special-status wildlife species that are known to be present within the Alternative 2a transmission line impact corridor:

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

Additional special-status wildlife species are believed to be present within one mile of the Alternative 2a transmission line impact corridor but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Arroyo chub (*Gila orcuttii*)
- California condor (*Gymnogyps californianus*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Golden eagle (*Aquila chrysaetos*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mountain plover (*Charadrius montanus*)
- Peregrine falcon (*Falco peregrinus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Swainson's hawk (*Buteo swainsoni*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Burrowing owl (*Athene cunicularia*)
- California red-legged frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Pallid bat (*Antrozous pallidus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Tricolored blackbird (*Agelaius tricolor*)

- Two-striped garter snake (*Thamnophis hammondii*)
- Western red bat (*Lasiurus blossevillii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- White-tailed kite (*Elanus leucurus*)

Non-Native and Invasive Plant Species
Weed species known to occur along the Alternative 2a transmission line corridor are:

- Cheatgrass (*Bromus tectorum*) *
- Hoary brome (*Bromus hordeaceus*) *
- Indian hedgemustard (*Sisymbrium orientale*)
- Prickly Russian thistle (*Salsola tragus*)
- Rat-tail fescue (*Vulpia myuros*) *
- Ripgut brome (*Bromus diandrus*) *
- Rock rose (*Cistus ladanifer*)
- Shortpod mustard (*Hirschfeldia incana*) *
- Spanish broom (*Spartium junceum*)
- Tall tumblemustard (*Sisymbrium altissimum*) *
- Tocalote (*Centaurea melitensis*) *
- Wild oats (*Avena* sp.) *
- Filaree (*Erodium cicutarium*) *
- Horehound (*Marrubium vulgare*)
- Mediterranean grass (*Schismus barbatus*) *
- Rabbit-foot grass (*Polypogon monspeliensis*)
- Red brome (*Bromus madritensis*) *
- Rock rose (*Cistus creticus*)
- Saltcedar (*Tamarix ramosissima*)
- Smilograss (*Piptatherum miliaceum*) *
- Sweetclover (*Melilotus officinalis*) *
- Tansy mustard (*Descurainia sophia*) *
- Tree tobacco (*Nicotiana glauca*)

* Indicates species that were too widespread and numerous to map.

Migratory Birds
In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. Two surveys were conducted along this alternative in fall 2010, and three surveys in spring 2011. Alternative 2a shares the same corridor with Alternative 2 for almost its entire length, with the exception of a small portion in the ANF around the unincorporated community of Green Valley. Because avian point count surveys were only conducted along the Proposed Action, the portion of Alternative 2a that diverges from Alternative 2 was not surveyed, and therefore the point count data for Alternative 2a is the same as for Alternative 2. Between the fall 2010 and spring 2011 surveys, a combined total of 82 avian species was positively detected and identified, with an estimated total of 2,369 individual birds detected. Because a portion of Alternative 2a was not surveyed, there could be additional species that use the Alternative 2a corridor regularly or periodically that were not represented during these surveys. In addition to Alternative 2, Alternative 2a also shares the same corridor through a portion of its northern end with Alternatives 1 and 3. It is also possible that even more avian species were incidentally observed along this alternative corridor during other Project surveys, and because these five survey dates presented only a snapshot of activity

in the survey areas, it is likely that, on average, more or less bird species do use this area than were detected during the point count survey dates.

Alternative 3

The Alternative 3 230 kV transmission line would start in the Mojave Ecotype, characterized by desert salt brush with scattered and isolated rural residential properties and agricultural fields. The level of precipitation in this ecotype ranges from 4 to 10 inches annually. The soils predominantly comprise alluvial plain and pediment with small hills (POWER 2011; see Biological Resources Technical Report). Dry lakes, or playas, occur in the arid northern portion of the Project area. Within the Antelope-Fremont Valleys watershed, streams crossed by the study corridors include Cache Creek, Oak Creek, Cottonwood Creek, Armargosa Creek, Anaverde Creek, Railroad Canyon Creek, Willow Springs, and multiple unnamed perennial and intermittent streams.

As the Alternative 3 transmission line would head south, it would cross a total of 69 acres of private land and would cross ANF lands for a small distance (two miles). The area is characterized by steep, mountainous terrain of the eastern Transverse Ranges, including the northern San Gabriel and Liebre Mountains. The ecotype is considered the Northern Transverse Range and is characterized by broad fault blocks and alleviated lowlands, and is dissected by granitic uplands (POWER 2011; see Biological Resources Technical Report). The eco-region is characterized by its high elevation setting and the influence from upper level weather patterns in the west, decreasing to mid-elevation ranges along the eastern section. Along the southern end of the eco-region, the high-elevation mountain range transitions into the foothills of the Santa Clarita Valley. Long periods of hot, dry weather are not uncommon at the high elevations of the Northern Transverse Ranges. Precipitation ranges from 6 to 40 inches annually throughout the eco-region.

Vegetation

Within the northern eco-region boundary of the Alternative 3 transmission line corridor, the most common vegetation communities are similar to the other Alternatives and consist of Mojave creosote bush scrub, Joshua tree woodland, and Riversidian sage scrub. Creosote bush, Joshua tree, and California sagebrush are the dominant species within those communities at lower elevations (USFS 2005, Sawyer 1993, Holland 1986, POWER 2011; see Biological Resources Technical Report). Where the Alternative 3 transmission line would cross through the central eco-region, vegetation is dominated by southern mixed chaparral series with a sparse mixture of deciduous broadleaf trees and conifers, decreasing in density as the elevation drops into the Santa Clarita Valley and Los Angeles Basin. Dominant overstory plant species include California juniper, oak species, ceanothus, big berry manzanita, and chamise. There are three major drainages and several small drainages that originate from the foothills of the ANF and spread over the northwestern Los Angeles County region. The San Francisquito Canyon Creek, a minor drainage in the area, has several small tributaries. The Santa Clara River also has two minor distributaries, San Francisquito Canyon Creek and Bouquet Canyon Creek. Many reaches of these natural and modified stream channels have the ability to support riparian areas and function as wildlife corridors.

Biological soil crusts are present within openings in coastal sage scrub, chaparral, Mojave desert scrub, and Joshua tree woodland on undisturbed soils throughout Alternative 3.

Special-Status Species

There are two special-status plants known to occur within the Alternative 3 transmission line impact corridor:

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*). Total of 5 individuals.
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*). Total of 420 individuals.

As not all areas of potential impact within the Alternative 3 transmission line corridor were surveyed, an additional 58 special-status plant species could be present within the impact corridor. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Baja navarretia (*Navarretia peninsularis*)
- Calico monkeyflower (*Mimulus pictus*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Pale-yellow layia (*Layia heterotricha*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)

- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

There are two special-status wildlife species known to occur within the Alternative 3 transmission line impact corridor:

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

Additional special-status wildlife species are believed to be present within one mile of the Alternative 3 transmission line impact corridor but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:

- Burrowing owl (*Athene cunicularia*)
- California condor (*Gymnogyps californianus*)
- California legless lizard (*Anniella pulchra*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Golden eagle (*Aquila chrysaetos*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Mountain plover (*Charadrius montanus*)

- Pallid bat (*Antrozous pallidus*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Swainson's hawk (*Buteo swainsoni*)
- Tricolored blackbird (*Agelaius tricolor*)
- Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)
- Western red bat (*Lasiurus blossevillii*)
- White-tailed kite (*Elanus leucurus*)

Weed species known to occur along the Alternative 3 transmission line corridor are:

- Cheatgrass (*Bromus tectorum*)
- Hoary brome (*Bromus hordeaceus*)
- Indian hedgemustard (*Sisymbrium orientale*)
- Prickly Russian thistle (*Salsola tragus*)
- Red brome (*Bromus madritensis*)
- Shortpod mustard (*Hirschfeldia incana*)
- Tall tumblemustard (*Sisymbrium altissimum*)
- Tocalote (*Centaurea melitensis*)
- Wild oats (*Avena* sp.)
- Filaree (*Erodium cicutarium*)
- Horehound (*Marrubium vulgare*)
- Mediterranean grass (*Schismus barbatus*)
- Rat-tail fescue (*Vulpia myuros*)
- Ripgut brome (*Bromus diandrus*)
- Smilograss (*Piptatherum miliaceum*)
- Tansy mustard (*Descurainia sophia*)
- Tree tobacco (*Nicotiana glauca*)

Migratory Birds

In 2008, an avian risk assessment was conducted along the entire Project area to gain a qualitative analysis of how much risk the existing transmission lines and proposed transmission lines presented to avian species based on factors such as proximity to water bodies, prevailing wind speeds and directions, and proximity to crucial avian habitat. The results of this assessment are provided for each alternative in Chapter 4. In 2010 and 2011, avian point count surveys were conducted to obtain a quantitative snapshot of bird use within the Project area. One survey was conducted along this alternative in fall 2010, and two surveys in spring 2011. Between the fall 2010 and spring 2011 surveys, a combined total of 39 avian species was positively detected and identified, with an estimated total of 524 individual birds detected. Alternative 3 shares the same corridor along its northern portion with Alternatives 1, 2, and 2a. Because avian point count surveys were only conducted along the Proposed Action, the portions of Alternative 3 that diverge from Alternative 2 were not surveyed. Because a portion of Alternative 3 was not surveyed, there are likely additional species that use the Alternative 3 corridor regularly or periodically that were not represented during these surveys. It is also possible that even more avian species were incidentally observed along this alternative corridor during other Project surveys, and because these three survey dates presented only a snapshot of activity in the survey areas, it is likely that, on average, more or less bird species use this area than were detected during the point count survey dates.

This transmission line would also parallel the Santa Monica Conservancy's Mountains Conservation Property. This property provides habitat for a variety of protected species including, but not limited to, the mountain lion, badger, and spotted owl. This land serves as a transition between coastal and desert ranges. The property does not allow access to the public, thereby limiting disturbance to the species and habitat that are present within the property. The Alternative 3 transmission line would bisect through the middle of this property. However, the transmission line would parallel existing lines and roads that also run through this property.

The South Coast Missing Linkages project has also developed a comprehensive plan for maintaining and restoring critical habitat linkages between existing reserves (SCW 2008). The linkage along the proposed Alternative 3 transmission line alignment serves to connect the San Gabriel and Castaic ranges. The Santa Clara River provides breeding sites and traveling routes for a variety of wildlife, and supports other critical natural processes such as natural flood control, recharge of groundwater basin, and nutrient cycling (SCW 2008). State Route 14 and Sierra Highway are major transportation routes and pose the greatest barriers to wildlife movement between the northern and southern sections of the ANF. Therefore, the South Coast Missing Linkages project has identified routes for species to migrate from the ANF north of State Route 14 through the Mountains Conservation Property to the ANF south of State Route 14.

3.3.2 EARTH RESOURCES

Introduction

The following discussion addresses existing environmental conditions related to geology, seismicity, soils, mineral resources and paleontology (Earth Resources) in the Proposed Action and Alternative areas. In addition, existing laws and regulations relevant to geology, seismicity, soils and paleontology are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Action or Alternatives.

The information presented in this section has been derived from the Preliminary Geotechnical Evaluation, the Paleontological Resources Assessment Report, and the Land Use Technical Report located in Volumes III and IV of this Final EIS/EIR. Please refer to the reports for more detailed information related to Earth Resources.

The purpose of the technical reports was to provide a detailed inventory of Earth Resources within the study area and to assess the Alternative corridors and other Project components within the Project study area within the context of potential geologic and seismic hazards and impacts to Earth Resources associated with implementation of the Project. The technical reports: 1) present regulatory framework, 2) provide an overview of the technical methodology used in collecting baseline conditions and evaluating impacts, and 3) examine the affected environment within the study corridors and vicinity.

Overview of Methodology and Analysis Area

The Project study area is located within two geomorphic regions, or "provinces." These provinces, the Transverse Ranges Geomorphic Province and Mojave Desert Geomorphic Province, are divided by the northwest-trending San Andreas fault zone. The Antelope Valley, Mojave Desert and Barren Ridge part of the study area northeast of the San Andreas fault is located in the western corner of the Mojave Desert Province. The part of the study area southwest of the San Andreas fault, including the ANF, the Sierra Pelona area, and the cities of Santa Clarita and San Fernando, is within the Transverse Ranges Province.

The Mojave Desert Geomorphic Province is characterized by mountain ranges and hills of moderate relief that are partially buried and separated by broad alleviated basins, like the Antelope Valley (Norris and Webb 1990). This province is bounded in the study area by the San Andreas fault on the southwest and by the Garlock fault on the northwest, forming a triangular-shaped region on its west side. The Mojave Desert Province extends east from the study area. The Transverse Ranges Geomorphic Province is characterized by east-west trending mountain ranges and fault systems (Norris and Webb 1990). The province is bounded on the northeast by the San Andreas fault, and extends west and south from the study area.

Geology, Seismicity and Soils

The mountain ranges and hills of the Project study area comprise primarily Tertiary age (2 to 65 million years old) marine and non-marine sedimentary and volcanic rocks; Mesozoic era (65 to 245 million years old) granitic rocks; and Paleozoic era (245 to 570 million years old) metamorphic and granitic rocks including schist, gneiss and limestone. Younger Quaternary age (last 1.6 million years) alluvium and other sediments underlie low-lying valley and canyon bottoms as well as much of the Mojave Desert and Antelope Valley parts of the study area.

In general, the distribution of geologic units in the Project study area is such that much of the northern half, in the Antelope Valley and Mojave Desert, is underlain by Quaternary alluvial sediments. Much of the southern half of the Project study area, in the mountainous ANF and Sierra Pelona, is underlain by older Tertiary and pre-Tertiary rock formations, with the exception of canyon bottoms and other drainage areas comprising alluvium. The geologic units are described in further detail in Table 1 in the Preliminary Geotechnical Evaluation (August 2010; see Volume IV of this Final EIS/EIR).

Baseline geologic, seismic and soils information were collected from literature, GIS data and online sources for the Proposed Action, Alternatives, and surrounding areas. The literature and data review was supplemented by field reconnaissance. Review and reconnaissance focused on the identification of specific geologic hazards and paleontological resources along and adjacent to the proposed ROWs.

Mineral Resources

Mineral resources include those areas identified for exploration, development and production of energy resources. This component also includes mining claims. The Southern California region, including portions of the Mojave Desert, is one of the most highly mineralized areas in the United States. Regional mineral resources consist of oil and deposits of rock, sand and gravel.

Most of Southern California's on-shore oil deposits are located in Los Angeles County. In addition, California is the largest producer of sand and gravel in the nation.

Both metallic and non-metallic mineral resources are located in the vicinity of the Project study area. Mineral resources in the study area of Kern County consist primarily of limestone and dolomite deposits, primarily being quarried for production of cement. In Los Angeles County, the principal mineral commodities in the study area are sand, gravel and crushed and broken stone. Metallic mineral deposits are present in both counties in varying amounts and are primarily restricted to bedrock areas in the mountainous regions; gold, copper and tungsten were the predominant metallic minerals (ores) mined in these counties. However, no active metallic mines are currently located in the vicinity of the Proposed Action or Alternatives.

There are producing oil wells located in the Placerita Canyon area, which is in the study area, but is not located within any of the Alternative routes discussed here. Portions of the federal mineral estate and subsurface State trust land within the study area have been leased for oil and gas. The Project area is deemed to have low potential for the occurrence of oil and gas based on a lack of evidence for marine source beds.

Regionally, the Rand Known Geothermal Resource Area (KGRA) northeast of Red Mountain has high potential for the occurrence of geothermal steam resources based on the occurrence of a known steam well. However, the Rand KGRA has a low potential for development.

Known and undiscovered locatable metallic mineral deposits occurring and expected to occur include gold, silver, base metals, tungsten and iron. Gold has been found in many areas on and surrounding the ANF. Zones of moderate and high potential for precious and base metals are scattered throughout the Project study area, with the exception of the military bases, where data is scarce, and alluvial filled valleys to the southwest, where exposures are poor.

Regionally, potential zones for nonmetallic minerals are associated with known outcrops. Limestone is known to occur along the east side of the Sierra Nevada and Tehachapi Mountains. High potential zones for feldspar are located east of Fremont Peak and near the Ord Mountains. Barite resources occur in the Calico Mountains, the Cady Mountains and the Waterman Hills north of the city of Barstow. Borates are known to occur in Searles Lake, near Kramer Junction, the Calico Mountains, Daggett Ridge and near Hector. Zeolites are known to occur in the Mud Hills, Opal Mountain, near Hector, Alvord Mountain and the El Paso Mountains. Hectorite clay occurs near the Hector railroad siding off of Highway 40, and bentonite occurs in the Mud Hills, Kramer Hills and the El Paso Mountains.

Numerous active mining claims are located in the Project area. An active mining claim is a pre-existing, legal right to explore for mineral resources. Mines can be developed from mining claims; however, many claims are never developed.

Saleable minerals consist mostly of construction materials such as crushed and dimension stone and sand and gravel, in addition to clay used for pond sealant. These deposits are known to occur in many locations throughout and adjacent to the Project study area.

Common clays occur in the playas and Tertiary-age sedimentary rocks. Whether these deposits have potential for development depends on the proximity to markets and conflicts with other resources.

Industrial mineral mining (particularly construction material, such as sand and gravel or rip-rap) is very important to the USFS, counties and local municipalities, as well as for commercial purposes. The USFS uses these and other rock products for road construction and maintenance and for stream bank reinforcement/erosion control. ANF saleable minerals resources include sand and gravel as well as flagstone.

Proposed Alternative alignments traverse areas identified as sand and gravel resources by the State Mining and Geology Board in the Santa Clara River valley; however, no active production/quarrying operations are crossed by them.

Mineral Resource Zone 2 (MRZ-2, as classified by the California Division of Mines and Geology) areas are primarily concentrated along waterways, such as the Santa Clara River, as well as SR-126, Castaic Creek and east of Sand Canyon Road. The MRZ-2 contains construction-grade aggregate within the portion of the Santa Clara River that extends approximately 15 miles from Agua Dulce Creek in the east to the Ventura County boundary in the west.

Known mineral resources encompass portions of the Saugus-Newhall Production-Consumption (P-C) Region and the Palmdale P-C Region. These mineral resources are considered as either "permitted resources" (i.e., materials believed to be acceptable for commercial use that exist within property owned or leased by an aggregate producing company for which permission allowing extraction and processing has been granted), or "resources" (includes permitted resources as well as all potentially usable aggregate material that may be mined in the future, but for which no use-permit allowing extraction has been granted).

As of 2003, there are 525 acres used for mineral extraction of sand, gravel and rock. There are 14 permits for surface mining activities filed with the County, where the status ranges from recently filed to approved. Generally, these mining sites are located in the unincorporated communities of Canyon Country, Acton, Agua Dulce and Mint Canyon.

Baseline geologic, seismic and soils information were collected from literature, GIS data and online sources for the Proposed Action and Alternatives area and surrounding areas. The literature and data review was supplemented by field reconnaissance. Reviews and reconnaissance focused on the identification of specific geologic hazards and paleontological resources along and adjacent to the Project ROW.

The goal of the land use inventory (which included mineral resources) was to identify, map, describe and document the existing, planned and designated land uses within the Project area. Data was compiled within a one-mile-wide study corridor, 0.5 mile on each side of the assumed centerline of each Alternative route. The data inventories facilitated the assessment of potential land use impacts from the construction and operation of the BRRTP.

Initially, base maps were prepared at a scale of 1:12,000. Land use data collected from a number of environmental studies in the region were reviewed, refined and updated. Existing maps from a variety of sources were collected and included in the inventory, as appropriate. Agency land and resource management and planning documents were reviewed for applicable data and land management regulation policies. Online database searches of the BLM LR2000 system were also conducted.

Following these initial steps, key federal, State and local land and resource management agencies were contacted to update information and to solicit further input. These data were compiled and mapped utilizing a geographic information system (GIS). National, State and local agency GIS data layers were utilized to identify and more accurately assess surface land uses and land cover types. Field investigations were conducted to verify and supplement selected existing land uses.

Paleontology

The affected environment as it pertains to paleontological resources includes not only actual fossil remains collected at specific locations, but also the collecting localities themselves, as well as the geologic formations containing those localities. In this light, a particular geologic rock unit (i.e., formation) can be considered to represent a proxy for all possible paleontological resources (i.e., fossils) entombed and preserved in that formation in a given area, the fact that fossils have been recovered from that same formation in other areas where it crops-out is taken as an indication of the potential of that formation to preserve similar fossils wherever it occurs.

The goal of the paleontological resources inventory was to identify, describe, and map existing paleontological resources within the study area and to evaluate the level of resource significance for each. The inventory relied on a review of relevant published geologic reports (Kew 1924; Dibblee 1967; and Crowell 2003), privately published geologic mapping from the Dibblee Foundation (Dibblee and Ehrenspeck 1991, 1996a. 1996b, 1996c, 1997a, 1997b, 1997c; and Dibblee and Minch 2002); unpublished environmental technical reports (Hulbert 2004), and museum paleontological site records (Natural History Museum of Los Angeles County, Invertebrate Paleontology Section, San Diego Natural History Museum, and University of California, Museum of Paleontology). This approach was followed in recognition of the direct relationship between paleontological resources and the geologic formations within which they occur. Knowing the geology of a particular area and the documented fossil productivity of the formations occurring in that area, it is possible to make reasonable predictions about where fossils would, or would not, be encountered.

The results of the literature, institutional record, and field survey portions of the inventory were incorporated with GIS layers of Project milepost delineations to estimate the linear coverage of individual geologic formations along specific Project alignments. These data were then summarized and included in Table 2 in the Paleontological Resources Assessment Report (August 2010; see Volume IV of this Final EIS/EIR). Following this, paleontological resource sensitivity values were determined for each formation and the relative resource value of each Project alignment quantified based on the linear distribution (i.e., mileage).

Windshield surveys were conducted during September and October 2008 along the southern portion of the study area to verify geologic mapping and results of the literature and previous institutional record surveys. The survey was primarily conducted along LADWP access roads, but also involved some portions of public roads. During the survey work, selected bedrock outcrops were examined to determine paleontological sensitivity of geologic rock units occurring in the study area.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Project Components Common to All Action Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

New 230 kV Circuit

There are no distinctive geologic features present in this portion of the Project. There are rock formations present; however, the majority of these geologic formations contain more common rock outcrops, exposed road cuts, and soil-covered areas, and are not considered highly distinct.

The new circuit corridor would not cross any earthquake fault zones or active faults. The potential ground shaking level due to seismic activity along this portion of the Project is 0.40 g. This number represents percentage of ground acceleration level. Higher ground acceleration levels are attributable to higher levels of ground shaking during an earthquake. The corridor would cross 1.1 miles of mapped potential liquefaction hazard zones. This portion of the Project would traverse 5.5 miles of mapped landslides and contain 7.0 miles of potential earthquake-induced landslide hazard zones. The proposed corridor is reportedly underlain by shallow groundwater, at 10 feet in depth. According to the Los Angeles County General Plan, 1.5 miles of this portion of the Project would be located within a potential dam failure inundation zone due to the proximity to Bouquet Reservoir and Castaic Lake.

This portion of the Project would cross 0.3 mile of areas with slight erosion potential, 0.4 mile of areas with moderate erosion potential, and 11.3 miles of areas with severe to very severe erosion potential. Based on available data, there are no areas of high expansion potential within the proposed corridor. Data on corrosive soils potential are available for only some of the soils that would be traversed by the Proposed Action. Corrosive soils potential data exist for 8.6 miles of this portion of the Project. Of those 8.6 miles, the corridor would traverse 1.3 miles with low corrosive potential, 0.3 mile with moderate corrosive potential, and 7.0 miles with high corrosive potential.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology

Construction of the new 230 kV circuit would occur in areas underlain by the Saugus Formation, the Castaic Formation and the Mint Canyon Formation.

The Saugus Formation occurs along portions of the proposed corridor between MP 0.4 and 3.1, and contains very fossiliferous marine deposits as well as terrestrial deposits that locally contain fossil vertebrates. Marine fossils from the Saugus Formation include bryozoans, brachiopods, crabs, barnacles, gastropods, bivalves, echinoids, fish, and trace fossils (Eldridge and Arnold 1904; Kew 1924; Grant and Gale 1931; Winterer and Durham 1962, Squires and White 1983; Groves 1991a; Govean 1993). Fossil bony fish include sheephead (*Semicossyphus pulcher*), barracuda (*Sphyraena* sp.), and banjo fish (*Rhinobatos* sp.) (Govean 1993). Terrestrial vertebrate fossils include terrapins, tortoises, and lizards, as well as land mammals, such as extinct rabbit, gopher, pack rate, dog, cat, mastodon, tapir, horse, peccary, camel, deer, and bison in the city of Santa Clarita and the San Fernando Valley areas (Winterer and Durham 1954, 1962). Fossil land mammals have also been found elsewhere in the Saugus Formation; most notably extinct rabbit, gopher, pack rat, mammoths, horse, and llama of Irvingtonian-land-mammal age in Moorpark, California (Wagner et al. 2007).

The Castaic Formation occurs along the majority of the proposed corridor. A diverse collection of fossil marine invertebrates, dominated by gastropods and bivalves, has been found in the Castaic Formation (Skolnick and Arnal 1959; Stanton 1960, 1966, 1982; McDougall 1982; Govean 1993). Invertebrate fossils include foraminifers, sponges, bryozoans, barnacles, crustaceans, brachiopods, mollusks, and echinoids. Fossil marine vertebrates are rare, but include sharks, rays, bony fish, and marine mammals (Stanton 1966; Welton and Link 1982). Other fossils found in the Castaic Formation include fossil wood and leaves (Govean 1993). During the field survey, fossils were observed at several locations within strata of the Castaic Formation and included oxidized plant fragments, carbonized wood, and internal and external molds of marine mollusks.

The Mint Canyon Formation occurs along the proposed corridor between MP 0.2 and 0.6. Large and diverse fossil collections of plants (Axelrod 1940; Mount 1971), freshwater mollusks and ostracods (Kew 1924; Oakeshott 1958; Mount 1971), turtle (*Clemmys* sp.; Maxson 1930), and land mammals that include rabbit, dog, peccary (*Prosthennops* sp.), rhinoceros, camel (*Alticamulus* sp.), pronghorn antelope (*Merycodus necatus*), three genera of horse (*Merychippus intermontanus*, *M. sumani*, *Protohippus* sp., *Hipparion mohavense*, *Pliohippus* sp. cf. *P. fossulatus*), and mastodon have been found in the Mint Canyon Formation (Kew 1924; Maxson 1928, 1930; Stirton 1933, 1939; Savage et al. 1954; Kelly 1998). Thin lacustrine and fluviatile interbeds contain freshwater gastropods (*Paludestrina imitator*, cf. *Helminthoglypta* sp.), bivalves (*Amnicola* sp.), and ostracods (Kew 1924; Oakeshott 1958; Mount 1971). Local tuff beds contain fossil leaves that represent an oak-savanna community whose nearest related modern equivalent species now occur in southern California, southern Arizona, and northern Mexico (Axelrod 1940; Wallace 1940). These fossil leaves were derived from at least four habitats: lake-border and riparian, savanna, woodland, and Chaparral (Axelrod 1940). Although no fossils were observed in Mint Canyon Formation strata during the field survey, the results of the record search indicate several recorded fossil collecting localities (LACM and UCMP) in the Vasquez and Bouquet canyon portions of the study area.

Reconductoring of BR-RIN Transmission Line

There are no distinctive geologic features present in this portion of the Project. There are rock formations present in portions of the proposed reconductoring corridor; however, the majority of these geologic formations contains more common rock outcrops, exposed road cuts, and soil-covered areas, and is not considered highly distinct. A total of 2.4 miles of the reconductoring would cross the San Fernando fault zone located in the San Fernando Valley, and 1.4 miles would cross the Garlock Earthquake Fault Zone. Potential ground shaking along this portion of the Project due to seismic activity would range from 0.25g to 0.80g. The reconductoring would traverse 10 miles of mapped potential liquefaction hazard zones. This portion of the Project would traverse 2.9 miles of mapped landslides and contain 11.9 miles of potential earthquake-induced landslide hazard zones. The proposed reconductoring corridor is reportedly underlain by shallow groundwater in places. Groundwater depths range from less than ten feet to 184 feet, where data is available. According to the Los Angeles County General Plan, 2.4 miles of this portion of the Project would be located within a potential dam failure inundation zone due to the proximity to Bouquet and Van Norman reservoirs.

This portion of the Project would cross 40 miles of areas with slight erosion potential, 2.3 miles of areas with moderate erosion potential, and 24.1 miles of areas with severe to very severe erosion potential. Based on available data, the reconductoring would cross 0.4 mile of soils with high expansion potential. Data on corrosive soils potential are available for only some of the soils traversed by the Proposed Action. Corrosive soils potential data exist for 55.6 miles of this portion of the Project. Of those 55.6 miles, the reconductoring would traverse 10.2 miles with low corrosive potential, 26.2 miles with moderate corrosive potential, and 19.2 miles with high corrosive potential.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology
The reconductoring would occur in areas underlain by the Saugus Formation, the Pico Formation, the Castaic Formation, the Towsley Formation, the Monterey/Modelo Formation, the Mint Canyon Formation, quaternary alluvium, older alluvium, the Anaverde Formation, the Vasquez Formation, the San Francisquito Formation, plutonic igneous rocks, Mendenhall Gneiss, and Pelona Schist. The Saugus Formation occurs along 14.5 miles of the proposed reconductoring corridor. The Castaic Formation occurs along 12 miles of the proposed reconductoring corridor. The Mint Canyon Formation occurs along 1.5 miles of the proposed reconductoring corridor. Descriptions of the paleontological resources located within the Saugus Formation, the Castaic Formation and the Mint Canyon Formation can be found in the discussion of the addition of the new 230 kV circuit above.

The Pico Formation has a very limited distribution in the study area and is confined to this portion of the Project. It would occur along 0.1 mile of the route. It is rich with marine fossils that include abundant encrusting calcareous algae, foraminifera, sponges, marine worms, bryozoans, brachiopods, crabs, barnacles, mollusks, echinoids, sharks, bony fish, pinnipeds, and cetaceans (Eldridge and Arnold 1907; English 1914b; Kew 1924; Kellogg 1929; Grant and Gale

1931; Winterer and Durham 1962; Squires and White 1983; Groves 1991a, 1991b; Squires et al. 2006). Terrestrial fossils have also been found in the Pico Formation, such as pine (*Pinus* sp.), oak (*Quercus* sp.), bird, and small cat (Winterer and Durham 1962; Squires et al. 2006; unpublished UCMP data).

The Towsley Formation would occur along 2.2 miles of the reconductoring. It contains locally diverse assemblages of marine fossils that include foraminifera, bryozoans, brachiopods, marine worms, crabs, mollusks, echinoids, shark (*Isurus hastalus*), cetacean, sirenian (*Dusisiren jordani*), and walrus (*Imagotaria downsi*) (Eldridge and Arnold 1907; English 1914a, 1914b; Kew 1924; Grant and Gale 1931; Winterer and Durham 1954, 1962; Oakeshott 1958; Kern 1973; Repenning and Tedford 1977; Domning 1978; unpublished LACM data; unpublished UCMP data). The marine deposits exposed in the Elsmere Canyon area are particularly rich in marine fossils (Kern 1973). Fossils of marine mammals and land mammals have also been found in the Towsley Formation as exposed in Elsmere Canyon and include walrus (cf. *Pontolis* sp.) camel (cf. *Procamelus*) and tapir (English 1914a; unpublished UCMP data).

The Monterey/Modelo Formation would occur along one mile of the reconductoring. In the eastern part of the Ventura Basin, as well as in the Soledad, and Los Angeles basins, the Monterey/Modelo Formation contains locally abundant marine fossils including foraminifers, bivalve mollusks (e.g., *Delectopecten* sp.), gastropod mollusks, echinoids, fish, and cetaceans (*Mixocetus elysius*, *Pithanodelphis nasalis*) (Kellogg 1934; Daviess 1942; Winterer and Durham 1962; Bussino and Barnes 1984; Barnes 1985). Land vertebrates, such as birds (*Phalacrocorax femoralis*), have also been recovered from this rock unit in the study area (Miller 1929).

Quaternary alluvium would occur along 43.4 miles of the reconductoring corridor. Any organic remains (e.g., sub-fossils) preserved within the Quaternary alluvium are too young to be considered paleontological resources, because of the recent age of these deposits and their close association with modern drainages.

Older alluvium would occur along 3.4 miles of the reconductoring corridor. Although no fossils are presently known from the older alluvium in the study area, similar deposits have produced significant remains of Pleistocene megafauna (e.g., ground sloth, mammoth, and mastodon) from sites elsewhere in Southern California (Jefferson 1991).

The Anaverde Formation would occur along 0.3 mile of the reconductoring corridor. Fossils are rare in the Anaverde Formation (Dibblee 1967), but include a significant fossil flora collected from the sandstone-conglomerate facies of the formation as exposed in the northwestern end of Anaverde Valley (Wallace 1949; Axelrod 1950). Axelrod (1950) described 21 species of fossil plants from this area (UCMP Locality P4139) including willow (*Salix*), pine (*Pinus*), aspen (*Populus*), oak (*Quercus*), laurel (*Persea*), sumac (*Rhus*), crab apple (*Peraphyllum*), kidneywood (*Eysenhardtia*), soapberry (*Sapindus*), ceanothus (*Ceanothus*), buckthorn (*Rhamnus*), sycamore (*Platanus*), and serviceberry (*Amelanchier*).

The Vasquez Formation would occur along 0.1 mile of the reconductoring corridor. Fossils are extremely rare in the Vasquez Formation; but, according to Hall (2007), at least one fossil of the extinct horse *Merychippus* has been found in the formation. However, no reports were found of this purported discovery in the peer-reviewed literature. No fossils were observed in exposures of this rock unit during the windshield survey and there are no recorded fossil collecting localities reported from this rock unit in the institutional record search.

The San Francisquito Formation would occur along 1.4 miles of the reconductoring corridor. The San Francisquito Formation in the San Francisquito Canyon area contains very diverse fossil assemblages of shallow-marine invertebrate fossils, which includes corals, brachiopods, gastropods, bivalves, ammonites (*Diplomoceras* sp.), and sharks (Dickerson 1914; Kooser 1980, 1982; Saul 1983; Popenoe and Saul 1987; Squires et al. 1989; Kirby 1991; Kirby and Saul 1995; Squires and Saul 2006, 2007). Elsewhere in southern California, near Cajon Pass, a fossil plesiosaur has been found in the San Francisquito Formation (Kooser 1985; Lucas and Reynolds 1993). During the windshield survey trace fossils were observed at several locations within strata of the San Francisquito Formation and included cylindrical burrows made by infaunal marine invertebrates. The institutional record search found numerous recorded fossil collecting localities (LACM) in the Study Area.

Plutonic igneous rocks would occur along 7.6 miles of the reconductoring corridor. Because of the extremely high temperatures and pressures associated with the magmatic origin of the plutonic igneous rocks in the study area, no fossils are expected in these rocks.

Mendenhall Gneiss would occur along 2.0 miles of the reconductoring corridor. No fossils are expected in the gneiss because of the extreme temperatures and pressures associated with the metamorphic origin of these rocks.

Pelona Schist would occur along 4.0 miles of the reconductoring corridor. No fossils are expected in the Pelona Schist because of the extreme temperatures and pressures associated with the metamorphic history of these rocks.

New Haskell Canyon Switching Station

Distinctive geologic features were not observed at the location of the proposed Haskell Canyon Switching Station. The proposed Haskell Canyon Switching Station site is not located in an Earthquake Fault Zone. In order to evaluate the level of ground shaking that might occur at the proposed switching station, site-specific analysis was performed. The 2007 California Building Code (CBC) recommends that the design of structures be based on the horizontal peak ground acceleration (PGA) having two percent probability of exceedance in 50 years, which is defined as the Maximum Considered Earthquake (MCE). Using the USGS ground motion calculator, the design PGA for the switching station site was 0.40g. The requirements of the governing jurisdictions and the 2007 CBC should be considered in Project design. The proposed switching station site is not located in a liquefaction hazard zone. Although landslides are mapped and were observed in the vicinity of the proposed Haskell Canyon Switching Station site, it is not located in an earthquake-induced landslide hazard zone. Data regarding groundwater levels at the proposed switching station site are not available. The proposed switching station site is not located in a dam failure inundation zone.

The soil erosion potential at the proposed Haskell Canyon Switching Station site has been categorized as severe. NRCS data regarding the expansive potential of surface soils at the proposed switching station site have not been reported. However, based on the nature of the earth units mapped at the site and observed during the reconnaissance (clay shale and sandstone units), moderately to highly expansive soils may be present at this site. USDA data regarding the corrosive potential of surface soils at the proposed switching station site have not been reported. Detailed assessment of the potential for corrosive soils in the switching station area would be evaluated during the design phase of the Project.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology

Construction of the new Haskell Canyon Switching Station would occur in an area underlain by sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). These rock units are known to produce significant paleontological resources. Detailed descriptions of the paleontological resources located within these formations can be found in the discussion of the addition of the new 230 kV circuit above.

Expansion of Barren Ridge Switching Station

Distinctive geologic features were not observed in the proposed Barren Ridge Switching Station expansion area. The switching station is not located in an Earthquake Fault Zone. In order to evaluate the level of ground shaking that might occur at the switching station site, site-specific analysis was performed. Using the USGS ground motion calculator, the design PGA for the switching station site was 0.52g. The requirements of the governing jurisdictions and the 2007 CBC should be considered in Project design. The Barren Ridge Switching Station is located on relatively level ground on the Mojave Desert floor, and landslides are not present. The switching station is not located in an earthquake-induced landslide hazard zone. Data regarding groundwater levels at the switching station are not available. The switching station is not located in a dam failure inundation zone.

The soil erosion potential in the proposed Barren Ridge Switching Station expansion area has been categorized as slight. USDA data regarding the expansive potential of surface soils at the switching station have not been reported. However, based on the sandy nature of the surface soils mapped at the site and observed during the reconnaissance, the expansive potential of the soils at this site is considered low. The corrosive soil potential at the switching station has been categorized as low for concrete and moderate for steel.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology

The proposed expansion of the existing Barren Ridge Switching Station would occur in an area underlain by sedimentary deposits of Quaternary alluvium. Any organic remains (e.g., sub-fossils) preserved within the Quaternary alluvium are too young to be considered paleontological resources, because of the recent age of these deposits and their close association with modern drainages.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line. The transmission line for each action Alternative is discussed below.

Alternative 1

The proposed Alternative 1 transmission line route would begin at the Barren Ridge Switching Station in the Mojave Desert and travel southwest along the northwestern edge of the Mojave Desert and Antelope Valley, crossing areas underlain by Quaternary alluvial deposits. It would cross the San Andreas Fault Rift Zone (a rift zone is generally defined as a system of depressions in the ground between the parallel faults that make up a fault zone) near the western boundary of the Project study area and then run southeast over steep mountainous areas in the ANF underlain by areas of Mesozoic granitic rock, and by Plio-Pleistocene non-marine and Tertiary marine sedimentary formations. Quaternary alluvial deposits are present in canyons and drainage areas along the proposed Alternative 1 transmission line alignment. The transmission line would cross San Francisquito Canyon near the southern end and end at the proposed Haskell Canyon Switching Station site, which is underlain by Tertiary sedimentary formations.

The Alternative 1 transmission line would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. The San Andreas fault zone has long been recognized as the dominant seismotectonic feature in California. This active, right-lateral, strike-slip fault is over 700 miles long and strikes northwest through the state from the Gulf of California to north of San Francisco. Two of California's three largest historic earthquakes, the 1906 San Francisco earthquake and the 1857 Forth Tejon earthquake, occurred along the San Andreas fault (SCEC 2004). The slip rate of the fault is estimated to be 30 millimeters (mm) per year (Cao 2003). The fault is considered capable of producing earthquakes in excess of 7.4 on the Richter scale, and the average frequency of earthquakes along this segment of the San Andreas fault is 140 years (SCEC 2004).

The Garlock fault zone is a prominent fault feature in Southern California and strikes northeast across the northern part of the Mojave Desert province. Although this fault has not produced large earthquakes historically, geomorphic and stratigraphic evidence indicates that it has done so in the past. The Garlock fault is considered capable of generating about earthquakes in excess of 7.3 on the Richter scale. A portion of the Garlock fault zone near the Project study area ruptured due to the 1952 Kern County Earthquake that occurred on the White Wolf Fault (SCEC 2004). The slip rate of this fault is estimated to be 6 mm per year.

Potential ground shaking along the Alternative 1 transmission line due to seismic activity would range from 0.30g to 0.60g. Liquefaction hazard zones are located near the southern end of the proposed alignment near the proposed Haskell Canyon Switching Station site. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep ANF in the southern portion of the proposed alignment. Reported groundwater depths along this proposed

Alternative 1 transmission line alignment are on the order of 138 to 336 feet deep in the Antelope Valley area; an 0.2-mile portion of the proposed Alternative 1 transmission line alignment has an area of reported shallow groundwater 10 feet deep along the existing Castaic – Rinaldi corridor. A total of 1.5 miles of the Alternative 1 transmission line would be located within a potential dam failure inundation zone due to the proximity to Castaic Lake and Bouquet Reservoir.

The Alternative 1 transmission line would traverse soils with low to moderate sensitivity ratings. Variable areas of slight to very severe erosion potential exist along the proposed alignment. An area of high expansion potential is located along the existing Castaic – Rinaldi corridor. Areas of low to high corrosive soil potential exist along the proposed alignment. In general, the Alternative 1 transmission line would encounter more areas of severe to very severe erosion potential than the transmission line for Alternatives 2, 2a and 3.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology

The Alternative 1 transmission line would traverse 56.2 miles of sedimentary deposits of Quaternary alluvium, which accumulated relatively recently and are defined as having only minor sensitivity. This Alternative would also cross 43 miles of sedimentary deposits defined as having minor, major/undetermined and maximum sensitivity and 0.9 mile of areas underlain by plutonic igneous rocks with zero resource sensitivity. Roughly 1.1 miles of this Alternative would cross sedimentary deposits of the Oso Canyon Formation. This rock unit was deposited during the late Miocene (~10 Ma) and, although not proven to contain fossils, its sedimentary origin and fluvial paleoenvironments indicate a strong but unproven potential for producing fossil remains. Nearly 21 miles of Alternative 1 would traverse sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Hungry Valley Formation (fluvial, deltaic and lacustrine deposits of early Pliocene age; ~5 Ma), the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), the Ridge Route Formation (alluvial fan, fluvial and deltaic deposits of late Miocene to early Pliocene age; ~8.4 to 5 Ma), the Peace Valley Formation (deltaic and lacustrine deposits of late Miocene to early Pliocene age; ~8.4 to 5 Ma), the Quail Lake Formation (marine sandstones of late Miocene age; ~10 Ma) and the Mint Canyon Formation (deltaic, fluvial and lacustrine deposits of middle to late Miocene age; ~14 to 11).

Alternative 2

The proposed Alternative 2 transmission line route begins at the Barren Ridge Switching Station in the Mojave Desert and travels southwest along the northwestern edge of the Mojave Desert and then runs south across the Antelope Valley, traversing areas underlain by Quaternary alluvial deposits. Alternative 2 transmission line would cross the steep Ritter Ridge/Portal Ridge area and San Andreas Fault Rift Zone in the Leona Valley where Mesozoic granitic rocks, Pelona Schist and Pliocene sedimentary formations would underlie the proposed alignment. It would run south/southeast over the steep, mountainous ANF and through San Francisquito Canyon, Dry Canyon and Haskell Canyon. The ANF portion of the Alternative 2 transmission line south of the San Andreas Fault Rift Zone would be underlain by areas of Mesozoic granitic rock, Precambrian metamorphic rock, Pelona Schist, Tertiary marine and non-marine sedimentary formations, and Quaternary alluvium.

The Alternative 2 transmission line would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along this Alternative due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are located in the southern Antelope Valley and San Andreas Rift Zone areas. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep ANF in the southern portion of the proposed alignment. Reported groundwater depths along the proposed Alternative alignment are on the order of 172 to 295 feet deep in the Antelope Valley area, and 10 to 184 feet deep in the ANF. A total of 1.4 miles of the Alternative 2 transmission line would be located within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir and Bouquet Reservoir.

Variable areas of slight to very severe erosion potential exist along the proposed Alternative 2 transmission line alignment, along with areas of low to high corrosive soil potential.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology
The Alternative 2 transmission line would traverse 43.5 miles of sedimentary deposits of Quaternary alluvium. Because these deposits are accumulated relatively recently, they are defined as having only minor sensitivity. This transmission line would cross 11.5 miles of sedimentary deposits defined as having minor, major/undetermined and maximum sensitivity. Roughly 16 miles of this transmission line would cross areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. Nearly five miles of this transmission line would cross sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma), the Vasquez Formation (alluvial fan, fluvial and deltaic strata of late Oligocene to early Miocene age; ~26 to 22 Ma) and the San Francisquito Formation (marine sedimentary rocks of late Cretaceous to early Paleocene age ~70 to 60 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium and the Vasquez Formation indicates a strong but unproven potential for producing fossil remains. The San Francisquito Formation is defined as having major paleontological resource sensitivity. This transmission line would traverse 2.3 miles of sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age; ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity.

Alternative 2a

The Alternative 2a transmission line would cross the same terrain as the Alternative 2 transmission line and would deviate only in the localized re-route around the unincorporated community of Green Valley. The proposed Green Valley localized re-route portion of the Alternative 2a transmission line would cross areas of steep terrain along Leona Divide, Grass Mountain, and a ridge area north of Portal Canyon where it would be predominantly underlain by Mesozoic granitic rock and Precambrian metamorphic rock. The Green Valley re-route would not cross a known active fault. Potential ground shaking along this Alternative due to seismic activity would range from 0.60g to 0.80g. No liquefaction hazard zones are mapped along the Green Valley re-route. No landslides are shown on geologic maps reviewed for this evaluation. Earthquake-Induced Landslide Hazard Zones are located on the steep terrain along this proposed Alternative alignment. Groundwater data was not readily available for the portion of this Alternative in the ANF. No potential dam failure inundation zones are mapped along the proposed Green Valley re-route alignment.

The Alternative 2a transmission line would cross the same terrain as the Alternative 2 transmission line and would deviate only in the localized re-route around the unincorporated community of Green Valley. The Green Valley localized re-route portion of the Alternative 2a transmission line would be underlain by areas of severe to very severe erosion potential. Areas of moderate corrosive soil potential exist along the proposed Alternative alignment.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology

The Alternative 2a transmission line would cross 0.3 mile of paleontological resources with major/undetermined sensitivity. A total of 4 miles of this transmission line, all of which is underlain by rock units having zero resource sensitivity, would be slated for helicopter construction of lattice towers.

Alternative 3

The proposed Alternative 3 transmission line route begins at the Barren Ridge Switching Station in the Mojave Desert and travels southwest along the northwestern edge of the Mojave Desert and then runs south across the Antelope Valley, traversing areas underlain by Quaternary alluvial deposits. The Alternative 3 transmission line would cross the steep Portal Ridge area and San Andreas Fault Rift Zone in the Leona Valley where Pelona Schist predominantly would underlie the route. It would run west/southwest over the steep, mountainous Sierra Pelona and through Mint Canyon, Bouquet Canyon and Haskell Canyon. The Sierra Pelona portion of the Alternative 3 transmission line south of the Antelope Valley would be underlain by areas of Pelona Schist, granitic rock, and Tertiary marine and non-marine sedimentary formations. Quaternary alluvial deposits are present in canyons and drainage areas along the proposed Alternative 3 transmission line alignment.

The Alternative 3 transmission line would cross two active faults with the potential for surface rupture including, the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along this transmission line due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are located in the San Andreas Rift Zone and in low-lying canyon areas in the southern part of the proposed Alternative alignment. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are located in the steep Sierra Pelona in the southern portion of the proposed transmission line alignment. Reported groundwater depths along this proposed transmission line alignment are on the order of 10 to 295 feet deep in the Antelope Valley area, and 10 to 326 feet deep in the portions of the Sierra Pelona and canyon areas in the southern portion of the transmission line. Nearly two miles of the Alternative 3 transmission line would be located within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir.

Variable areas of slight to severe erosion potential exist along the proposed Alternative 3 transmission line alignment. Areas of low to high corrosive soil potential exist along the proposed transmission line alignment.

There are no active mining operations within the existing transmission line corridor. Likewise, there are no known areas designated or delineated for mineral resource recovery (MRZ-2 or otherwise) along the line. In addition, there are no known mineral resources that have noted value to the region and to the residents of the State.

Paleontology
The Alternative 3 transmission line would traverse 52.3 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity. Roughly 18.4 miles of this transmission line would cross areas underlain by plutonic igneous rocks and metamorphic rocks (including the Pelona Schist) with zero resource sensitivity. About 1.3 miles of the Alternative 3 transmission line would cross sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium indicates a strong but unproven potential for producing fossil remains. About six miles of this transmission line would cross sedimentary deposits of the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age; ~6 to 5 Ma), the Mint Canyon Formation (deltaic, fluvial and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma), and the Tick Canyon Formation (fluvial and lacustrine deposits of early Miocene age; ~24 to 16 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity.

3.3.3 WATER RESOURCES

Introduction

Water resources within the BRRTP study area were inventoried and analyzed to assess potential impacts that would result from construction and operation of the Proposed Action and Alternatives.

The information and analysis that is presented in this section have been derived from the Barren Ridge Renewable Transmission Project Water Resources Technical Report, contained in Volume IV of this Final EIS/EIR. This report is hereby incorporated by reference in its entirety. While this section presents a summary of the findings of the Water Resources Technical Report, please refer to that report for more detailed information on Proposed Action and Alternative effects on water resources.

Overview of Methodology and Analysis Area

The goal of the water resource inventory was to identify, map, describe, and document existing water resources within the study corridors of each action Alternative. Detailed data inventories were compiled to facilitate the assessment of potential water resource impacts resulting from construction and operation of the Proposed Action and Alternatives.

Base maps of the Project area were prepared at a scale of 1:12,000. Water resource data collected from federal and State databases were reviewed, refined, and updated. Existing maps from the United States Geological Survey (USGS), National Wetland Inventory (NWI), and Federal Emergency Management Agency (FEMA) were collected and included in the inventory, as appropriate. These data were compiled and mapped utilizing a geographic information system (GIS). The study used National Agriculture Imagery Program 2005 color aerial photography, and national, State, and local agency GIS data layers to identify and more accurately assess surface land uses and land cover types.

Existing water resources were identified within the 0.5-mile wide study corridor to present an overview of the water resources near the transmission line Alternative routes. Water resource inventory data were collected based on the assumption that the transmission line could be placed at any point within a 500-foot corridor, to allow for flexibility in final design utilizing a ROW of 200 feet.

For more information on inventory methodology and analysis area, refer to the Water Resources Technical Report in Volume IV.

Regulatory Framework

The Regulatory Framework for the Project area, including applicable federal, State, and local laws, ordinances, regulations, and standards, is included in Appendix D of this Final EIS/EIR.

Summary of Inventory Results

Some water resources are common to all action Alternatives; for example, all action Alternatives would cross the Antelope-Fremont Valleys Watershed and the Santa Clara River East Watershed. Those resources common to all action Alternatives are presented below.

Watersheds

All proposed Alternative alignments have three watersheds in common: the Antelope-Fremont Valleys Watershed, the Santa Clara River Watershed, and the Los Angeles River Watershed. The Antelope-Fremont Valleys watershed is a large, closed basin that receives surface water from tributaries in the San Gabriel Mountains and the Tehachapi Mountains, and from precipitation.

The Santa Clara River Watershed is divided into the Upper Santa Clara River and Lower Santa Clara River. The headwaters of the river are located at Pacifico Mountain in the San Gabriel Mountains. The Santa Clara River flows southwest, draining into the Pacific Ocean.

The Los Angeles River Watershed receives flow from the San Gabriel Mountains, the Santa Monica Mountains, and the Santa Susana Mountains, as well as from groundwater seeps in the Glendale Narrows. South of the San Fernando Valley, flows are dominated by urban runoff, flood flows, and effluent from several municipal wastewater treatment plants. The Los Angeles River empties into the Pacific Ocean in the City of Long Beach.

Floodplains

A 100-year floodplain is an area of land that has at least a one percent chance of inundation every year, or at least once every 100 years. FEMA has estimated and mapped 100-year floodplains throughout much of the Antelope-Fremont Valley and Santa Clara River watersheds. In the Antelope Valley, all Alternatives would cross 100-year floodplains associated with Pine Tree Canyon, Cache Creek, Oak Creek, Cottonwood Creek, and numerous unnamed intermittent drainages flowing southeast from the Tehachapi Mountains. In the San Gabriel Mountains, all Alternatives would cross the 100-year floodplain associated with San Francisquito Canyon, Santa Clara River, and Placerita Canyon.

Surface Water

Due to the arid nature of the Antelope and Fremont Valleys and the temperate-to-hot climate of the western San Gabriel Mountains, many of the streams are ephemeral in nature and flow only in response to precipitation in the immediate area. Intermittent streams flow only during certain times of year: for example, when they receive water from a spring, seep, melting snowpack from higher elevations, or other periodic sources.

All Alternatives would generally parallel the Tehachapi Mountains, and cross numerous ephemeral and intermittent streams. Streams that would be crossed by all Alternatives include Pine Tree Canyon and Cache Creek, and multiple unnamed ephemeral and intermittent drainages between mile marker 0 and mile marker 13.2. Additionally, all Alternatives would cross the Santa Clara River during reconductoring of the existing 230 kV transmission line, approximately 4.5 miles south of the proposed Haskell Canyon Switching Station.

Wetlands

Section 404 CWA jurisdictional wetlands are defined by the EPA and the USACE as "those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The NWI provides approximate locations of wetlands one acre or larger; these wetlands may or may not be jurisdictional based on the USACE 1987 *Wetlands Delineation Manual* and the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0).

Riparian Conservation Areas and Significant Ecological Areas

Riparian Conservation Areas (RCAs) have been established within the ANF to protect, maintain, or improve water quality, site productivity, channel stability, riparian vegetation, and riparian-dependent species and habitats. RCAs combine the ecologic concerns of riparian ecosystems with the hydrologic concerns of floodplains and stream banks.

Significant Ecological Areas (SEAs) are designated by the County of Los Angeles, and defined as "ecologically important or fragile land and water areas, valuable as plant and animal communities." SEAs are classified as one or more of the following: 1) habitats for rare and endangered species of plants and animals; 2) restricted natural communities – ecological areas which are scarce on a regional basis; 3) habitat restricted in distribution in the county; 4) breeding or nesting grounds; 5) unusual biotic communities; 6) sites with critical wildlife and fish value; and 7) relatively undisturbed habitat.

Groundwater and Wells

All Alternatives would cross four groundwater basins: the Fremont Valley Groundwater Basin, the Antelope Valley Groundwater Basin, the Santa Clara River Groundwater Basin, and the San Fernando Valley Groundwater Basin. The Fremont Valley Groundwater Basin drains a surface area of approximately 335,000 acres (523 square miles); the Antelope Valley Groundwater Basin drains an area of approximately 1,010,000 acres (1,580 square miles); the Santa Clara River Valley East Groundwater Sub-basin drains an area of approximately 66,200 acres (103 square miles); and the San Fernando Valley Groundwater Basin drains an area of approximately 145,000 acres (226 square miles).

Well locations were obtained from the California Department of Water Resources (DWR) and the USGS. These wells included privately owned wells registered through the DWR, municipal wells, and wells owned and operated by the USGS to monitor groundwater basin levels, to record trends in groundwater depth, and to monitor groundwater quality.

Water Quality

Water quality is a measure of the suitability of water for its intended uses, with respect to dissolved solids, gases, and suspended material. Surface and groundwater quality objectives for the proposed Alternative 1 alignment area are described in the Los Angeles Region Water Quality Control Plan and the Water Quality Control Plan for the Lahontan Region (Basin Plans). Additional groundwater quality objectives are described in California's Groundwater Bulletin 118. Water quality objectives were established to protect the existing and potential beneficial uses of surface water and groundwater.

Beneficial uses are goals or desired uses of a water body as specified in the Basin Plans, or as designated by federal, State, or local laws and regulations.

Surface waters that would be crossed by the Alternatives have the common designated existing, potential, or intermittent beneficial uses of Municipal and Domestic Supply, Industrial Service Supply, Industrial Process Supply, Agricultural Supply, Ground Water Recharge, Freshwater Replenishment, Hydropower Generation, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sport Fishing, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened, or Endangered Species, Spawning, Reproduction, and/or Early Development, and Wetland Habitat.

Each Regional Board has developed narrative or numerical water quality objectives for various parameters. These objectives apply to all inland surface waters, enclosed bays, wetlands, and estuaries. Details of the water quality objectives for surface waters crossed by all Alternatives may be found in the Water Resources Technical Report in Volume IV.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a List of Water Quality Limited Segments. Waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.

Streams listed on the Section 303(d) List of Water Quality Limited Segments are considered sensitive resources in the routing of transmission lines and are protected from water quality impacts.

Groundwater quality in the basins that would be crossed by all Alternatives varies by area. In the southwest portion of the Fremont Valley Groundwater Basin, groundwater is typically sodium bicarbonate or calcium–sodium sulfate in character, with total dissolved solids (TDS) ranging between 800 milligrams per liter (mg/L) to 1,000 mg/L. Portions of the basin are impaired by high levels of fluoride, sodium, and chloride. Groundwater in the alluvial portion of the Santa Clara River Valley East Sub-basin is characterized by calcium bicarbonate in the east, and calcium sulfate in the west; groundwater in the Saugus Formation portion of the aquifer is of calcium bicarbonate character in the southeast, calcium sulfate in the central portion, and sodium bicarbonate in the western portion. From east to west, TDS ranges from approximately 550 mg/L to 1,000 mg/L in the alluvial aquifer and 500 mg/L to 900 mg/L in the Saugus Formation aquifer. Impairments in the Santa Clara River Valley East Sub-basin include excessive nitrate content in some areas, elevated TDS content, particularly in the western portions, and trichloroethylene and ammonium perchlorate in the eastern portion of the sub-basin. Groundwater in the San Fernando Valley groundwater Basin is characterized by calcium sulfate-bicarbonate in the western portion and by calcium bicarbonate in the eastern portion. Water in this basin is impaired by volatile organic compounds such as trichloroethylene (TCE), perchloroethylene (PCE), petroleum compounds, chloroform, nitrate, sulfate, and heavy metals. Sulfate contamination occurs predominantly in the western portion of the basin, whereas the eastern portion of the basin is contaminated by TCE, PCE, and nitrate.

Project Components Common to All Alternatives

The following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be identical for each of the action Alternatives.

Addition of New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes to add a new 230 kV transmission line onto existing Castaic – Olive 230 kV

Transmission Line structures. Of this 12-mile addition, approximately 8.5 miles would follow the alignment of the Alternative 1 transmission line from mile marker 74.7 to the proposed Haskell Canyon Switching Station, and is discussed below as Alternative 1. The remaining 3.5 miles of this addition would be within the Santa Clara River Watershed. This portion would not cross 100-year floodplains, but would cross one unnamed tributary to Grasshopper Canyon and one unnamed tributary to Castaic Lake, none of which are Section 303(d)-listed. Sections of this addition drain into the Elderberry Forebay, which is within the Castaic Lake reach of the Santa Clara River Valley East Sub-basin. There are no municipal, USGS, or privately-own wells within a 200-foot radius of the 230 kV transmission line addition.

Reconductor Existing 230 kV Transmission Line

Of the 76 miles of existing 230 kV transmission line that would be reconductored, 61 miles would follow the proposed alignment of the Alternative 2 transmission line, and is discussed below as Alternative 2. The remaining 15 miles of the reconductoring and upgrade would run from the proposed Haskell Canyon Switching Station south to the Rinaldi Substation. This section of the reconductor would begin in the Santa Clara River Watershed and end in the Los Angeles River Watershed. All action Alternatives would cross the Santa Clara River during the reconductoring of the existing 230 kV transmission line. No wells occur within 200 feet of the 230 kV transmission line south of the proposed Haskell Canyon Switching Station. The Santa Clara River is a Section 303(d)-listed river, and is impaired by fecal coliform bacteria due to various nonpoint and (unspecified) point sources.

Construction of the Haskell Canyon Switching Station

The proposed Haskell Canyon Switching Station would be located in the Santa Clara River Watershed. The proposed switching station would not be located within a 100-year floodplain. It would be located on an upland area adjacent to an unnamed intermittent stream tributary to Haskell Canyon. No NWI wetlands occur in the area of the proposed switching station or within the proposed footprint. The proposed switching station would not be located above a groundwater basin, but would be located approximately 0.5 mile upstream of the Haskell Canyon reach of the Santa Clara River Valley East Sub-basin. There are no municipal, USGS, or privately owned wells recorded with a 200-foot radius of the proposed switching station footprint. No Section 303(d)-listed waterbodies are located near the proposed Haskell Canyon Switching Station.

Expansion of the Existing Barren Ridge Switching Station

The Barren Ridge Switching Station is located in the Antelope-Fremont Valleys Watershed. It is not located within any 100-year floodplain, nor is it crossed by any streams; the nearest stream is Pine Tree Canyon, located approximately 0.5 mile south of the switching station. There are no NWI wetlands mapped within the existing or proposed footprint of this switching station. The Barren Ridge Switching Station is located above the Fremont Valley Groundwater Basin. There are no municipal, USGS, or privately owned wells recorded within a 200-foot radius of the proposed switching station footprint. The switching station is not located near a Section 303(d)-listed waterbody.

New 230 kV Double-Circuit Transmission Line

The action Alternatives differ only in the alignment of the proposed 230 kV double-circuit transmission line extending from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station.

Alternatives 2 and 2a would require the addition of a temporary transmission line during construction of the proposed 230 kV double-circuit transmission line. This temporary transmission line would begin 0.30 mile north of Johnson Road, near Masonhill Road. The temporary transmission line would generally follow San Francisquito Canyon Road for 7.5 miles. Temporary disturbance for the temporary transmission line would be approximately two acres per mile. There would be no permanent disturbance.

Inventory results presented below are inclusive of all Project components (applicable new 230 kV transmission line route, new 230 kV circuit, reconductoring of BR-RIN transmission line, construction of the temporary transmission line, new Haskell Canyon Switching Station, and expansion of Barren Ridge Switching Station) within each Alternative discussion.

Alternative 1

Watersheds

Watersheds that would be crossed by Alternative 1 are common to all Alternatives, and have been discussed above. No unique watershed would be crossed by this Alternative.

Floodplains

In addition to the 100-year floodplains common to all Alternatives, in the Antelope Valley Alternative 1 would cross multiple 100-year floodplains associated with intermittent drainages flowing southeast from the Tehachapi Mountains. Within the San Gabriel Mountains, Alternative 1 would cross a 100-year floodplain associated with the Castaic Spillway.

Surface Water

The northern section of Alternative 1 would generally parallel the Tehachapi Mountains from Barren Ridge Switching Station to mile marker 58, and cross numerous ephemeral and intermittent streams. In addition to the streams common to all Alternatives, these streams include Oak Creek, Cottonwood Creek, and Little Oak Canyon. As Alternative 1 would near the San Andreas Rift Zone, it would cross intermittent streams draining the foothills, including Cow Spring Canyon, Horse Camp Canyon, and Tentrock Canyon. Where Alternative 1 would pass over the rift zone and enter the mountains and the ANF, it would cross multiple intermittent streams that flow out of the mountains, including West Fork Liebre Gulch and Liebre Gulch, Trough Canyon, Posey Canyon, Grasshopper Canyon, San Francisquito Canyon, and many other streams, both named and unnamed.

The California and the Los Angeles Aqueducts import water from northern and central California to Southern California. The West Branch of the California Aqueduct, operated by the California Department of Water Resources, would be crossed by Alternative 1 approximately two miles southwest of Holiday Lake. Alternative 1 would also cross the Castaic Spillway at mile marker 76.7; Castaic Lake is the terminus of the West Branch of the California Aqueduct.

The First Los Angeles Aqueduct, operated by LADWP, would be generally paralleled by Alternative 1 between mile marker 13.6 and 31.4. In addition, Alternative 1 would cross the First Los Angeles Aqueduct tunnel near mile marker 81.9.

Hydric Soils

Hydric soils are soils that are saturated at or near the surface, whether from flooding or high groundwater tables, of a frequency or duration that promotes the development of anaerobic conditions that affect plant growth and promote the establishment of hydrophytic vegetation. Some soils have phases that are not hydric, depending on groundwater table and local flooding and ponding characteristics.

Soils data from the Soils Survey Geographic Database are classified as all hydric soils, partially hydric soils, not hydric soils, and no data available. Hydric soils data were not available for areas within the ANF; however, available data for the remainder of Alternative 1 revealed areas of partially hydric and not hydric soils. Areas of partially hydric soils are found along the proposed Alternative 1 alignment as it parallels the base of the Tehachapi Mountains, and in the area of the San Andreas Rift Zone. Additional areas of partially hydric soils are located between Violin Canyon and San Francisquito Canyon. No hydric soils would be located along Alternative 1.

Wetlands

Wetlands along the proposed Alternative 1 alignment are restricted to an area between mile marker 47.5 and 48.7, along the California Aqueduct. These wetlands are associated with the aqueduct itself, and have been classified by the NWI as a lower perennial riverine wetland, with an unconsolidated bottom, that is both artificially and permanently flooded (R2UBKHx). The aqueduct is lined with concrete, above which are buffers of bare soil; neither wetland nor riparian vegetation is associated with these NWI wetlands.

Riparian Conservation Areas and Significant Ecological Areas

Many streams that would be crossed by or in proximity to Alternative 1 within the ANF have associated RCAs. Alternative 1 would cross 151 RCAs, of which 102 would be affected. Many RCAs are associated with unnamed streams; however, named streams with associated RCAs include West Fork Liebre Gulch, Liebre Gulch, Trough Canyon, Posey Canyon, Big Oak Flat, Violin Canyon, Charlie Canyon, and San Francisquito Canyon.

Approximately 7.8 miles of Alternative 1 would cross the San Andreas Rift Zone SEA along the southwestern portion of the Antelope Valley. Alternative 1 would also cross a 0.3-mile portion of the Santa Clara River SEA in San Francisquito Canyon.

Groundwater and Wells

In the vicinity of the proposed Alternative 1 alignment, the average depth-to-water measurements in monitored wells of the Fremont Valley Groundwater Basin ranged between 117.4 feet and 345.0 feet. Monitored wells in the vicinity of the proposed Alternative 1 alignment within the Antelope Valley Groundwater Basin recorded average depth-to-water measurements ranged between 152.8 feet and 390.8 feet. In the vicinity of the proposed Alternative 1 alignment, average depth-to-water levels in monitored wells within the Santa Clara River Valley East Sub-basin ranged from 9.6 feet to 67.0 feet.

One well would be located adjacent to Alternative 1 near mile marker 46.1; no other wells would occur along Alternative 1.

Water Quality

Alternative 1 would cross one Section 303(d)-listed stream, Dry Canyon, at mile marker 81.9. Dry Canyon Creek is listed for impairments from fecal coliform bacteria due to natural sources, urban runoff, and storm sewers.

The northern portion of the Antelope Valley Groundwater Basin is typically calcium-bicarbonate in nature, with TDS ranging from 200 mg/L to 800 mg/L. Groundwater throughout this basin is impaired by high levels of boron and nitrate.

Alternative 2

Watersheds

Like Alternative 1, Alternative 2 would pass through the Antelope-Fremont Valleys watershed and the Santa Clara River Watershed. Alternative 2 would pass through the central region of this watershed, and cross through the eastern section of the Upper Santa Clara River Valley Watershed north of the Santa Clara River.

Floodplains

Alternative 2 would cross through 100-year floodplains associated with streams flowing from the Tehachapi Mountains, including Pine Tree Canyon and Oak Creek. Alternative 2 would also cross the broad floodplain in the Antelope Valley associated with the many unnamed drainages that flow from the Tehachapi Mountains. Near mile marker 37, Alternative 2 would cross the floodplain associated with Broad Canyon and several unnamed drainages, and then cross the floodplain associated with Myrick Canyon near mile marker 41. Where this Alternative route would cross the San Andreas Rift Zone and enter the ANF, it would cross smaller floodplains associated with Elizabeth Lake, San Francisquito Canyon, and Bee Canyon. Additional floodplains associated with San Francisquito Creek and Portal Canyon are located southwest of the unincorporated community of Green Valley.

Surface Water

Like Alternative 1, Alternative 2 would cross Pine Tree Canyon, Cache Creek, and many unnamed ephemeral and intermittent drainages that flow from the Tehachapi Mountains into the Antelope Valley. As it passes through the valley, the proposed Alternative 2 alignment crosses multiple unnamed drainages that drain from the edges of the valley toward the valley floor, including Myrick Canyon at mile marker 41.1. Where Alternative 2 would cross the San Andreas Rift Zone and enter the ANF, it would cross numerous named and unnamed streams that drain the Rift Zone and mountains. Among these streams are Myrick Canyon, San Francisquito Canyon, Bee Canyon, Baird Canyon, Dry Canyon, Portal Canyon, and Pettinger Canyon.

The California Aqueduct would be crossed by Alternative 2 at mile marker 43.7, and the Los Angeles Aqueduct Tunnel would be paralleled by Alternative 2 from mile marker 52.2 to mile marker 52.6.

Hydric Soils

Hydric soils data were not available for areas within the ANF; however, available data for the remainder of the proposed Alternative 2 alignment revealed areas of partially hydric and not hydric soils. Areas of partially hydric soils are found along the proposed Alternative 2 alignment between mile marker 29, near the unincorporated community of Willow Springs, and mile marker 39, east of the Antelope Valley California Poppy Reserve. Additional areas of partially hydric soils are mapped near mile markers 39.5, 41.2, 43.3, and within the San Andreas Rift Zone from mile marker 44.5 to mile marker 45.8. No hydric soils would be located along Alternative 2.

Wetlands

Two NWI wetlands are mapped along the proposed Alternative 2 alignment. The first wetland is located at mile marker 43.7; this wetland is associated with the aqueduct itself, and has been classified by the NWI as a lower perennial riverine wetland, with an unconsolidated bottom, that is both artificially and permanently flooded (R2UBKHx). The sides of the aqueduct are lined with concrete, above which is an access road and buffers of bare soil; neither wetland nor riparian vegetation is associated with this NWI wetland.

The second wetland would be located between mile marker 45.2 and mile marker 45.4. The NWI has classified this as a palustrine emergent wetland with saturated soils for extended periods (PEMB). This wetland is associated with a series of artificial ponds and wetland areas between Elizabeth Lake Road on the west and Kellogg Valley Road on the east.

Riparian Conservation Areas and Significant Ecological Areas

Many streams that would be crossed by Alternative 2 within the ANF have associated RCAs. Alternative 2 would cross 66 RCAs, of which 50 would be affected. Many RCAs are associated with unnamed streams; however, named streams with associated RCAs include South Portal Canyon, San Francisquito Canyon, Bee Canyon, Baird Canyon, Dry Canyon, and Pettinger Canyon.

Approximately 1.9 miles of Alternative 2 would cross the San Andreas Rift Zone SEA east of Elizabeth Lake. Alternative 2 would also cross a 0.2-mile portion of the Santa Clara River SEA near Portal Canyon, and a 0.5-mile portion in San Francisquito Canyon.

Groundwater and Wells

Within the central Antelope Valley Groundwater Basin, monitored wells in the vicinity of the proposed Alternative 2 alignment recorded average depth-to-water measurements ranged between 152.8 feet and 390.8 feet.

One well is located adjacent to the proposed Alternative 2 alignment near mile marker 41.7; no other wells occur along the proposed Alternative 2 alignment.

Water Quality

Alternative 2 would generally parallel one Section 303(d)-listed stream, Dry Canyon, from mile marker 56.2 to mile marker 58.2. Dry Canyon Creek is listed for impairments from fecal coliform bacteria due to natural sources, urban runoff, and storm sewers.

Groundwater quality in the basins that would be crossed by Alternative 2 varies by area. The central portion of the Antelope Valley Groundwater Basin is typically sodium bicarbonate or sodium sulfate in nature, with TDS ranging from 200 mg/L to 800 mg/L. Groundwater throughout this basin is impaired by high levels of boron and nitrate.

Alternative 2a

Alternative 2a was designed to avoid the unincorporated community of Green Valley, and would be identical to Alternative 2 with the exception of a 6.7-mile re-route designed to avoid the unincorporated community of Green Valley. This deviation in the proposed alignment begins at mile marker 46, south of the unincorporated community of Elizabeth Lake, and rejoins the proposed alignment of Alternative 2 at mile marker 50.7, south of the unincorporated community of Green Valley.

Watersheds

Like Alternative 2, Alternative 2a would pass through the Antelope-Fremont Valleys watershed and the Santa Clara River Watershed. The re-route portion of Alternative 2a would lie within the northeast section of the Upper Santa Clara River Watershed, approximately two miles south of the divide between the Santa Clara River Watershed and the Antelope-Fremont Valleys Watershed.

Floodplains

Alternative 2a would cross through 100-year floodplains associated with streams flowing from the Tehachapi Mountains, including Pine Tree Canyon and Oak Creek. Alternative 2a would also cross the broad floodplain in the Antelope Valley associated with the many unnamed drainages that flow from the Tehachapi Mountains. Near mile marker 37, Alternative 2a would cross the floodplain associated with Broad Canyon and several unnamed drainages, and then cross the floodplain associated with Myrick Canyon near mile marker 41. Where this Alternative would cross the San Andreas Rift Zone and enter the ANF, it would cross smaller floodplains associated with Elizabeth Lake, San Francisquito Canyon, and Bee Canyon. An additional floodplain associated with San Francisquito Creek is located southwest of the unincorporated community of Green Valley.

No 100-year floodplains are mapped within the re-route portion of Alternative 2a.

Surface Water

Alternative 2a would cross Pine Tree Canyon, Cache Creek, and many unnamed ephemeral and intermittent drainages that flow from the Tehachapi Mountains into the Antelope Valley. As it passes through the valley, the proposed Alternative 2a alignment crosses multiple unnamed drainages that drain from the edges of the valley toward the valley floor, including Myrick

Canyon at mile marker 41.1. Where Alternative 2a would cross the San Andreas Rift Zone and enter the ANF, it would cross numerous named and unnamed streams that drain the Rift Zone and mountains. Among these streams are Myrick Canyon, San Francisquito Canyon, Bee Canyon, Baird Canyon, Dry Canyon, and Pettinger Canyon.

The California Aqueduct would be crossed by Alternative 2a at mile marker 43.7, and the Los Angeles Aqueduct Tunnel would be paralleled by Alternative 2a from mile marker 52.2 to mile marker 52.5.

The Alternative 2a re-route would cross five unnamed streams, including tributaries to South Portal Canyon and San Francisquito Canyon. From mile marker 1.9 to mile marker 2.4, the re-route would parallel Munz Canyon. The re-route would also cross tunnels of the Los Angeles Aqueduct at mile marker 3.8 and mile marker 5.2.

Hydric Soils

Available hydric soils data for Alternative 2a revealed areas of partially hydric and not hydric soils. Areas of partially hydric soils are found along the proposed Alternative 2a alignment between mile marker 29, near the unincorporated community of Willow Springs, and mile marker 39, east of the Antelope Valley California Poppy Reserve. Additional areas of partially hydric soils are mapped near mile markers 39.5, 41.2, 43.3, and within the San Andreas Rift Zone from mile marker 44.5 to mile marker 45.8. No hydric soils would be located along Alternative 2a.

Wetlands

Two NWI wetlands are mapped along the proposed Alternative 2a alignment. The first wetland is located at mile marker 43.7; this wetland is associated with the aqueduct itself, and has been classified by the NWI as a lower perennial riverine wetland, with an unconsolidated bottom, that is both artificially and permanently flooded (R2UBKHx). The sides of the aqueduct are lined with concrete, above which is an access road and buffers of bare soil; neither wetland nor riparian vegetation is associated with this NWI wetland.

The second wetland would be located between mile marker 45.2 and mile marker 45.4. The NWI has classified this as a palustrine emergent wetland with saturated soils for extended periods (PEMB). This wetland is associated with a series of artificial ponds and wetland areas between Elizabeth Lake Road on the west and Kellogg Valley Road on the east. No additional wetlands are mapped along the Alternative 2a reroute.

Riparian Conservation Areas and Significant Ecological Areas

Many streams that would be crossed by Alternative 2a within the ANF have associated RCAs. Alternative 2a would cross 94 RCAs. Sixty-six of these are the same as those in Alternative 2; a separate 28 are distinct to Alternative 2a, all 28 of which would be affected. Many RCAs are associated with unnamed streams; however, named streams with associated RCAs include Portal Canyon, San Francisquito Canyon, Bee Canyon, Baird Canyon, Dry Canyon, and Pettinger Canyon. The Alternative 2a re-route would parallel the Munz Canyon RCA for approximately 1.2 miles from mile marker 1.2 and mile marker 2.4. The re-route would cross RCAs associated with unnamed tributaries to South Portal Canyon and San Francisquito Canyon, as well as RCAs associated with ephemeral drainages.

Approximately 1.9 miles of Alternative 2a would cross the San Andreas Rift Zone SEA east of Elizabeth Lake. Alternative 2a would also cross a 0.5-mile portion of the Santa Clara River SEA in San Francisquito Canyon. No SEAs would be crossed by the re-route.

Groundwater and Wells

Alternative 2a would cross the groundwater basins described in Alternative 2. While the proposed Alternative 2a re-route alignment is not located across any groundwater basin, the first mile is located on a ridge immediately above the boundary of the San Andreas Rift section of the Antelope Valley Groundwater Basin.

One well is located adjacent to Alternative 2a near mile marker 41.7; no other wells occur along Alternative 2a.

Water Quality

Surface waters that would be crossed by Alternative 2a have the same designated existing, potential, or intermittent beneficial uses as those described in Alternative 2.

Alternative 2a would generally parallel one Section 303(d)-listed stream, Dry Canyon, from mile marker 56.2 to mile marker 58.2. Dry Canyon Creek is listed for impairments from fecal coliform bacteria due to natural sources, urban runoff, and storm sewers.

Groundwater quality in the basins that would be crossed by Alternative 2a varies by area, as previously described in Alternative 2.

Alternative 3

Watersheds

Alternative 3 would pass through the central region of the Antelope-Fremont Valleys watershed and cross through the eastern section of the Upper Santa Clara River Valley Watershed north of, and generally paralleling, the Santa Clara River.

Floodplains

Alternative 3 would cross through 100-year floodplains associated with streams flowing from the Tehachapi Mountains, including Pine Tree Canyon and Oak Creek. Alternative 3 would also cross the broad floodplain in the Antelope Valley associated with the many unnamed drainages that flow from the Tehachapi Mountains. Additional floodplains would be crossed near mile marker 41, where Alternative 3 would cross a floodplain associated with Myrick Canyon; at Amargosa Creek, near mile marker 51.7; at Mint Canyon, near mile marker 66.9; at Vasquez Canyon, near mile marker 70.1; at Bouquet Canyon, near mile marker 72.2, and at Haskell Canyon, near mile marker 75.

Surface Water

Like the other Alternatives, Alternative 3 would cross Pine Tree Canyon, Cache Creek, and many unnamed ephemeral and intermittent drainages that flow from the Tehachapi Mountains into the Antelope Valley. As it passes through the valley, the proposed Alternative 3 alignment crosses multiple unnamed streams that drain from the edges of the valley toward the valley floor, including Myrick Canyon at mile marker 41.2. As the proposed Alternative 3 alignment turns southeast, it crosses several unnamed streams flowing from upland areas near the California Aqueduct. As Alternative 3 would cross Leona Valley and enters the Sierra Pelona, it would cross multiple named and unnamed streams, including Amargosa Creek, Anaverde Creek, Hauser Canyon, Willow Springs Canyon, Letteau Canyon, Tick Canyon, Mint Canyon, Vasquez Canyon, Bouquet Canyon, and Haskell Canyon.

Alternative 3 would cross the California Aqueduct at mile marker 48.5.

Hydric Soils

For the small section of Alternative 3 that would cross the ANF, hydric soils data were not available; however, available data for the remainder of the proposed Alternative 3 alignment revealed areas of partially hydric and not hydric soils. Areas of partially hydric soils would be found along Alternative 3 between mile marker 40.9, near the floodplain associated with Myrick Canyon Creek, and mile marker 43.2, north of West Avenue J. Larger areas of partially hydric soils are mapped from mile marker 50.8 to mile marker 54.6, from mile marker 55.9 to mile marker 60.5, and from mile marker 68.1 to mile marker 73.2. No hydric soils would be located along Alternative 3.

Wetlands

One NWI wetland is mapped along the proposed Alternative 3 alignment. Located at mile marker 48.5, this wetland is associated with the California Aqueduct, and has been classified by the NWI as a lower perennial riverine wetland, with an unconsolidated bottom, that is both artificially and permanently flooded (R2UBKHx). The sides of the aqueduct are lined with concrete, above which is an access road and buffers of bare soil; neither wetland nor riparian vegetation is associated with this NWI wetland.

Riparian Conservation Areas and Significant Ecological Areas

Alternative 3 would cross six RCAs, of which five would be affected. One RCA is associated with Mint Canyon; the remainder are associated with unnamed drainages, including one tributary to Mint Canyon.

Approximately 4.3 miles of Alternative 3 would cross the San Andreas Rift Zone SEA at the eastern end of Leona Valley. Alternative 3 would also cross a 0.4-mile portion of the Cruzan Mesa SEA between Bouquet Canyon and Cruzan Mesa.

Groundwater and Wells

Alternative 3 would cross the Acton Valley Groundwater Basin. The Acton Valley Groundwater Basin drains a surface area of approximately 8,270 acres (12.9 square miles). Alternative 3 would cross the northern portion of this basin, where average depth-to-water measurements in monitored wells ranged between 1.2 feet to 80.5 feet.

Two wells would be located adjacent to Alternative 3. One well would be located at mile marker 41.9, the second would be located near mile marker 45.5. No other wells would occur along Alternative 3.

Water Quality

Alternative 3 would cross one Section 303(d)-listed stream, Mint Canyon Creek, at mile marker 66.9. Mint Canyon Creek is listed for impairments from nitrate and nitrite due to nonpoint sources.

The central portion of the Antelope Valley Groundwater Basin is typically sodium bicarbonate or sodium sulfate in nature, with TDS ranging from 200 mg/L to 800 mg/L. Groundwater throughout this basin is impaired by high levels of boron and nitrate. In the northern section of the Acton Valley Groundwater Basin, groundwater is impaired by high concentrations of TDS, sulfate, and chloride.

CHAPTER 4: ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This chapter evaluates the potential for the Barren Ridge Renewable Transmission Project (BRRTP) Proposed Action and Alternatives, described in Chapter 2, to cause physical change to the existing environment, as described in Chapter 3. It also evaluates whether such physical changes may result in a significant effect on the environment. The evaluation considers the Project's direct and reasonably foreseeable indirect incremental impact on the existing environment. Analysis of potential cumulative impacts of the Proposed Action and Alternatives is contained in Chapter 5 of this Final EIS/EIR.

The Proposed Action describes the proposed design features, construction techniques, operational characteristics, and maintenance and decommissioning procedures. Access/ground disturbance models were used to produce data describing where and to what extent access roads would have to be built or upgraded to construct and maintain the proposed transmission facilities along the Project, Alternative routes, and switching station sites for the Proposed Action and Alternatives. In addition, potential ground disturbance and/or vegetation clearing associated with construction was estimated based on average spacing and size of support structures, pulling and tensioning sites, and temporary material storage areas. Areas of the Proposed Action and Alternatives requiring helicopter construction were analyzed under developed emissions and ground disturbance estimates. For the new switching station and the switching station upgrade, areas were identified that would be cleared or graded for switching station equipment, including new access roads into the Haskell Canyon Switching Station.

The assessment of potential impacts of the new 230 kV transmission line assumes that the transmission line facilities could be at any point within an approximately 500-foot-wide corridor to allow for flexibility in final design layout, considering a widest right-of-way (ROW) of 200 feet. Although most of the impact assessments completed for environmental resources were completed for a consideration of the entire 500-foot-wide corridor, actual impacts vary by resource. The exact location of the proposed 200-foot ROW within the 500-foot-wide impact assessment corridor would be determined during engineering design. The actual study corridors used for resource impact assessment encompassed these 500-foot-wide corridors and varied as appropriate and necessary for each resource. Refer to Chapter 3 for a description of study corridor widths for each resource.

As part of its Proposed Action plan, the City of Los Angeles Department of Water and Power (LADWP) would commit to the application of General Practices (GPs) on a Project-wide basis. LADWP has incorporated these design features, measures, and procedures into the description of the Proposed Action to avoid or reduce impacts from Project construction or operation. The GPs have been considered in the analysis of impacts and the determinations of impact significance. In the assessment of identified impacts, GPs have been assumed to be part of the Proposed Action and Alternatives and are therefore not included as mitigation measures. The GPs are considered a commitment by LADWP, and implementation of each GP would be monitored by the Lead Agencies if the Proposed Action or an Alternative were approved. GPs that would be integrated into Project construction and operations processes are listed in Chapter 2 of this Final EIS/EIR.

4.1.1 IMPACT ASSESSMENT PROCESS

Impacts that would result from constructing and operating the Proposed Action and Alternatives were determined by comparing these actions to the existing environment. First, the various types of impacts that could occur were defined and impact locations and intensity were identified. Impacts can be either direct or indirect, adverse or beneficial, and short- or long-term.

Impact Types

The development of the Proposed Action or an Alternative has the potential to result in three basic types of impacts to environmental resources. These impact types include the following:

> **Construction impacts** associated with the short-term presence of Project construction activities, resulting in impacts such as ground disturbance, noise, and air emissions;
>
> **Increased access-related impacts** associated with enhanced accessibility by persons, such as by using Project access roads into areas that are currently remote or inaccessible; and
>
> **Operational impacts** associated with the long-term presence of Project facilities and improvements, such as inspections, maintenance checks, and repairs, and the long-term operation of facilities and improvements.

These basic impact types and their associated effects on existing environmental resources were evaluated for all Alternatives. As appropriate and necessary, potential Project impacts were then reassessed to determine whether or not the utilization of applicable mitigation measures would reduce the environmental impacts associated with the Project to a level of insignificance.

Impact Assessment Methodology

The "Impact Assessment Methodology" section under each resource discussion describes the criteria that were used to determine the significance of identified impacts, as required by the California Environmental Quality Act (CEQA) (see "Significance Criteria" below). The section also describes any specific methods, such as modeling, that were used to conduct the impact analysis for a particular resource.

The impact locations and intensity were recorded by milepost, and the impacted area described. To determine impact intensity, an "impact model" was developed for each resource classification using the same criteria, as applicable:

- Resource sensitivity—the probable response of a particular resource to Project-related activities
- Resource quality—the pre-Project condition of the resource potentially affected
- Resource quantity—the amount of the resource potentially affected

- Duration of impact—the period of time over which the resource would be affected, measured as short-term (up to a few years) or long-term (life of the Project and beyond)
- Time of year—the season of period of time which the resource would be affected
- Setting—consideration of the Project location, the affected region, and interests
- Expressed public concern—the amount of concern expressed by land management agencies and the public

Specific impacts and detailed methodology for each resource are documented in the technical reports described in the introduction to Chapter 3 (see Volumes III and IV). The technical reports are accompanied by data tables that indicate the location and description of specific resource features and values, the initial impact levels to these resources, the mitigation measure(s) recommended to reduce impacts, and the residual impacts expected following mitigation.

Significance Criteria

For the purposes of CEQA compliance, the significance of each identified impact of the Proposed Action and Alternatives has been determined. The CEQA Lead Agency is responsible for determining whether an impact is significant and is required to adopt feasible mitigation measures to minimize or avoid each significant impact.

A significant impact is defined by CEQA as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (CEQA Guidelines Section 15382). In comparison, the National Environmental Policy Act (NEPA) states that " 'Significantly' as used in NEPA requires considerations of both context and intensity" (40 CFR 1508.27). Significance criteria serve as a benchmark for determining if a project action would result in a significant adverse environmental impact when evaluated against the existing environment. Although guidance provided by CEQA and NEPA are used to determine the significance of impacts, the determination of impact significance is based on the independent judgment of the Lead Agencies. The establishment of any criteria used to evaluate the significance of impacts is also the responsibility of the Lead Agencies. A series of criteria, listed in the "Impact Assessment Methodology" section for each resource, was used to determine the significance of each impact. Some impact categories lend themselves to scientific or mathematical analysis and are therefore more quantitative in nature, while others are more qualitative, and some resources (such as Air Quality and Climate Change) have significance thresholds established by regulatory agencies that were used to determine impacts.

Under the CEQA criteria, potential impacts are assessed and determined to be of either no impact, less than significant impact, less than significant impact with mitigation applied, or significant impact. Conclusions presented in the resource analysis discussions regarding the significance of identified impacts are provided for the purposes of CEQA only, as significance conclusions for individual impacts are not required for compliance with NEPA.

Pursuant to NEPA, the intent of the environmental impact analysis is to provide a scientific and analytic basis for comparing the Alternatives. The analysis also identifies any adverse environmental effects that cannot be avoided should the Project be implemented, and presents mitigation measures to minimize adverse environmental impacts (40 CFR 1502.16).

Environmental effects include direct, indirect, and cumulative impacts. Cumulative impacts are discussed in Chapter 5 of this Final EIS/EIR. The relationship between the short-term uses of man's environment and the maintenance and enhancement of long-term productivity is discussed in Chapter 6 of this DEIS/EIR.

Mitigation Measures

After identification of the impact intensity, duration, and locations, mitigation measures were examined to see if they could reduce either the intensity or duration of impacts. If analysis concludes that the possibility of a potentially significant impact exists even after GPs are considered, both NEPA and CEQA require specific actions. Both Section 1508.20 of the Council for Environmental Quality regulations for implementing NEPA and CEQA Guidelines Section 15370 define mitigation as:

a. Avoiding the impact altogether by not taking a certain part or parts of an action;
b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
c. Rectifying the impact by repairing, rehabilitating, or restoring the affected ["impacted" under CEQA] environment;
d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
e. Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation is only required for significant impacts under CEQA; however, NEPA requires consideration of mitigation for all of the adverse impacts of a project, and requires the agency to state whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why not (40 CFR 1505.2(c)). For this reason, some mitigation measures described in this document are wholly appropriate under NEPA, although the impacts they address may not be considered significant under CEQA. Any mitigation adopted in the Record of Decision would be included in the BLM right-of-way grant and the USFS Special Use Authorization.

LADWP committed to two project-wide mitigation measures to reduce Project impacts in multiple resources areas as described in the resource sections in the following chapter. The Three-Circuit Tower Mitigation and Helicopter Mitigation are described in detail in the description of the Proposed Action and Alternatives in Chapter 2 and are summarized below.

Three-Circuit Tower Mitigation (THREE-CIRCUIT) – A three-circuit lattice tower design would be implemented as described in Chapter 2, Section 2.2.4, at the locations shown in Figure 2-17, Three-Circuit Tower Mitigation Map.

Helicopter Mitigation (HELICOPTER) – Helicopter Mitigation shall be implemented, as described in Chapter 2, Section 2.2.3, in steep areas of the Angeles National Forest where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 2-22, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 2-22, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP.

Where feasible, mitigation measures have been identified that would reduce significant impacts to a less-than-significant level. Mitigation measures can be applied individually to impacts or can be combined with other mitigation measures to reduce or even eliminate impacts. The impacts remaining after applying mitigation measures are termed "residual impacts."

In some cases where impacts were low, or mitigation would not be effective, no mitigation was recommended. Where mitigation was warranted and would be effective, mitigation recommendations were made by the resource specialists to reduce or eliminate specific impacts. These mitigation measures are presented for consideration by decision makers as possible conditions of Project approval.

4.2 HUMAN ENVIRONMENT

4.2.1 AIR QUALITY AND CLIMATE CHANGE

Introduction

This section presents an analysis of the impacts of the Proposed Action and Alternatives, including a discussion of impacts and significance thresholds. Project air quality and global climate change impacts were evaluated on the basis of these significance criteria.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to air quality and climate change are addressed in this analysis:

- The potential air quality impacts from all phases of the Project, especially construction of transmission lines and increased vehicular trips
- Construction equipment's impact on air quality
- The potential for the Project to affect global climate change

Impact Assessment Methodology

Assessment of potential air quality impacts is based on an evaluation of emissions associated with construction and operation of the Project, and an assessment of whether the Project's emissions would exceed significance criteria, which are discussed below. Impacts are addressed on both a maximum daily emissions level and an annual emissions level. Short-term impacts that are above the daily emissions threshold would be determined to be significant, as would impacts that exceed the annual thresholds. Impacts are addressed on the basis of the air basin/district in which emissions would occur. In addition, air emissions that could have an adverse affect on sensitive receptors or wilderness areas have been addressed.

For a conservative analysis, it was assumed that construction of the proposed new Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station would commence in Year 1 (2012); construction of the new transmission line and completion of construction at the Barren Ridge Switching Station and Haskell Canyon Switching Station would occur in Year 2 (2013), and construction of the new circuit from Haskell Canyon to the Castaic Power Plant and reconductoring of the existing transmission line would occur in Year 3 (2014).

Significance Criteria

To evaluate potential significance of air quality and global climate change impacts addressed in the Air Quality and Climate Change evaluation, both the CEQA checklist and applicable air quality management district or air pollution control district criteria were utilized. Six criteria were identified, as discussed below:

Criterion AIR-1: Conformance with Applicable Air Quality Plan. The BRRTP route lies in the jurisdiction of three air quality management agencies: the East Kern Air Pollution Control District (EKAPCD) and Antelope Valley Air Quality Management District (AVAQMD) in the Mojave Desert Air Basin (MDAB), and the South Coast Air Quality Management District (SCAQMD) in the South Coast Air Basin (SCAB). Nonattainment areas are required to develop Air Quality Management Plans (AQMPs), which provide strategies for attaining and maintaining the ambient air quality standards.

SCAQMD. The most recent air quality management plan adopted by the SCAQMD for the SCAB is the 2007 AQMP (SCAQMD 2007). The control strategies proposed in the 2007 AQMP focus on emissions of $PM_{2.5}$ and ozone precursors, and identify precursor emissions as the key source of $PM_{2.5}$ in the atmosphere, as opposed to directly emitted $PM_{2.5}$. The BRRTP is consistent with the goals of the AQMP to shift energy production to renewable sources and thereby reduce emissions of criteria pollutants in the SCAB. The Proposed Action and Alternatives would not conflict with or obstruct implementation of the AQMP.

AVAQMD. The AVAQMD adopted its 2004 Ozone Attainment Plan (AVAQMD 2004) on April 20, 2004, and has developed a Draft 2008 Federal 8-Hour Ozone Attainment Plan (AVAQMD 2008) to address air quality attainment in its portion of the Western Mojave Desert nonattainment area. The AVAQMD has adopted fugitive dust control measures in its Rule 403. The construction contractor would be required to comply with all AVAQMD Rules and Regulations applicable to its activities in areas under AVAQMD jurisdiction.

EKAPCD. The EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (EKAPCD 1992). The EKAPCD has also adopted fugitive dust control requirements in its Rule 402. The construction contractor would be required to comply with all EKAPCD Rules and Regulations applicable to its activities in areas under EKAPCD jurisdiction.

Criterion AIR-2: Regional Air Quality Significance Thresholds. The local air quality regulatory agencies have established significance thresholds under CEQA that can be used to assess whether the Proposed Action or Alternatives could have a significant impact on regional air quality. Regional significance thresholds are summarized in Table 4.2.1-1.

TABLE 4.2.1-1. REGIONAL AIR QUALITY SIGNIFICANCE THRESHOLDS

Criteria Pollutant	Antelope Valley AQMD		East Kern APCD		South Coast AQMD	
	Construction or Operation		Construction or Operation		Construction	Operation
	tons/year	lbs/day	tons/year	lbs/day	lbs/day	lbs/day
Carbon Monoxide (CO)	100	548	-	-	550	550
Oxides of Nitrogen (NO_x)	25	137	25	-	100	55
Reactive Organic Compounds (ROG)	25	137	25	137	75	55
Particulate Matter (PM_{10})	15	82	15	-	150	150
Particulate Matter ($PM_{2.5}$)	-	-	-	-	55	55
Oxides of Sulfur (SO_x)	25	137	27	-	150	150

Criterion AIR-3: Toxic Air Contaminant Emission Significance Thresholds. Toxic air contaminants (TACs) may be emitted from construction or operational activities. The SCAQMD has established significance thresholds for TACs, which indicate that if a sensitive receptor could be exposed to TACs that would result in a health risk above 1.0 in one million for cancer risk, or 1.0 for non-cancer hazards, a significant impact would result. While the SCAQMD's significance thresholds do not specifically define "sensitive receptors," the SCAQMD CEQA Air Quality Handbook identifies the following as land uses considered to be sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities.

In addition to TAC emissions, particulate matter has the potential to result in adverse health effects. Particles small enough to be inhaled into the deepest parts of the lung are of great concern to public health. Respirable particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$.

Epidemiological studies substantiate the correlation between inhalation of ambient PM and increased mortality and morbidity (ARB 2002a; ARB 2007d). The California Air Resources Board's (ARB's) assessment evaluated numerous studies and research efforts, and focused on PM and ozone, as they represent a large portion of known risk associated with exposure to outdoor air pollution. The ARB's analysis of various studies allowed large-scale quantification of the health effects associated with emission sources. In addition, although epidemiologic studies are numerous, few toxicology studies have investigated the responses of human subjects specifically exposed to diesel particulate matter, and the available epidemiologic studies have not measured the diesel particulate matter content of the outdoor pollution mix. The ARB has also identified diesel particulate as a TAC that has potential adverse health effects based on long-term (chronic) exposure.

The ARB's study concluded that there are significant uncertainties involved in quantitatively estimating the health effects of exposure to outdoor air pollution. Uncertain elements include emission and population exposure estimates, concentration-response functions, baseline rates of mortality and morbidity that are entered into concentration response functions, and occurrence of additional not-quantified adverse health effects (ARB, 2006). Many of these elements have a factor-of-two uncertainty.

It should be noted that PM in ambient air is a complex mixture that varies in size and chemical composition, as well as varying spatially and temporally. Different types of particles may cause different effects with different time courses, and perhaps only in susceptible individuals. The interaction between PM and gaseous co-pollutants adds additional complexity because in ambient air pollution, a number of pollutants tend to co-occur and have strong inter-relationships with each other (e.g., PM, SO_2, NO_2, CO, and O_3) (SCAQMD 2007; ARB 2006h; and ARB 2006i).

Regulatory agencies set protective health-based short- and long-term ambient concentration standards designed "in consideration of public health, safety, and welfare, including, but not limited to, health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy" (Health and Safety Code Section 39606(a)(2)). Ambient Air Quality Standards (AAQS) specify concentrations and durations of exposure to air pollutants that reflect the relationships between the intensity and composition of air pollution and undesirable effects. The fundamental objective of an AAQS is to provide a basis for preventing or abating adverse health or welfare effects of air pollution.

In developing the AAQS, state and local air quality regulatory agencies consider existing health science literature and recommendations from the California Office of Environmental Health Hazard Assessment (OEHHA). Standards are set to ensure that sensitive population sub-groups are protected from exposure to levels of pollutants that may cause adverse health effects. In the case of PM, CAAQS are peer reviewed by the Air Quality Advisory Committee (AQAC), an external scientific peer review committee, comprising world-class scientists in the PM field.

Within the SCAB, the SCAQMD further identifies localized ambient significance thresholds. These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the national ambient air quality standard (NAAQS) or California ambient air quality standard (CAAQS). The localized standards for PM are more stringent than either the NAAQS or the CAAQS. SCAQMD's localized significance thresholds for PM_{10} and $PM_{2.5}$ are 10.4 µg/m3 and 2.5 µg/m3 for construction and operation, respectively. These values were developed based on ARB guidance and epidemiological studies showing significant toxicity (resulting in mortality and morbidity) related to exposure to fine particles.

Criterion AIR-4: Federal General Conformity Significance Criteria. In addition to the regional and localized significance thresholds, the General Conformity Rule applicability emission thresholds (also referred to as *de minimis* thresholds) are shown in Table 4.2.1-2 and would apply to those portions of the BRRTP that require Federal approval and would be in Federal nonattainment areas.

TABLE 4.2.1-2. FEDERAL GENERAL CONFORMITY APPLICABILITY THRESHOLDS

Air Basin	NOx and ROG	PM_{10}	CO and $PM_{2.5}$
South Coast	10 tons/year	70 tons/year	100 tons/year
Mojave Desert	25 tons/year	N/A	N/A

As discussed in Chapter 3, the federal action portion of the Project must demonstrate that it conforms with the most recently approved State Implementation Plan (SIP). The most recently

EPA-approved SIP for the EKAPCD is the 1994 SIP, which the EPA approved in 1997. The AVAQMD's most recently EPA-approved SIP for the AVAQMD is the 1996 SIP, which the EPA approved in 1997. The most recently EPA-approved SIP for the SCAB is the 1996 SIP, which the EPA approved in 1997, and updated in 1999. The SIP update has been partially approved by the EPA, pending revisions to the inspection and maintenance program for mobile sources.

The General Conformity Rule also requires that the federal action implement applicable control measures as adopted in the approved SIP to reduce air emissions to the extent feasible. For federal actions that exceed the *de minimis* thresholds, the federal action may adopt mitigation measures that are designed to demonstrate that the action:

- Will not cause or contribute to new violations of an NAAQS;
- Will not interfere with provisions in the applicable SIP for maintenance of any NAAQS;
- Will not increase the frequency or severity of existing violations of any standard; or
- Will not delay the timely attainment of any standard.

If mitigation measures are adopted, the following conditions apply (40 CFR 93.160):

(a) Any measures that are intended to mitigate air quality impacts must be identified and the process for implementation and enforcement of such measures must be described, including an implementation schedule containing explicit timelines for implementation.

(b) Before determining that a federal action is in conformity, the federal agency making the conformity determination must obtain written commitments from the appropriate persons or agencies to implement any mitigation measures which are identified as conditions for making conformity determinations.

(c) Persons or agencies voluntarily committing to mitigation measures to facilitate positive conformity determinations must comply with the obligations of such commitments.

(d) In instances where the federal agency is licensing, permitting or otherwise approving the action of another governmental or private entity, approval by the federal agency must be conditioned on the other entity meeting the mitigation measures set forth in the conformity determination.

(e) When necessary because of changed circumstances, mitigation measures may be modified so long as the new mitigation measures continue to support the conformity determination. Any proposed change in the mitigation measures is subject to the reporting requirements of Section 93.156 and the public participation requirements of Section 93.157.

(f) Written commitments to mitigation measures must be obtained before a positive conformity determination and such commitments must be fulfilled.

A discussion of mitigation measures proposed for the federal action is provided in the analysis for each Alternative.

To address the General Conformity Rule, the specific requirements determined to be necessary for the proposed Project in order to complete construction activities on NFS lands and public lands managed by the BLM have been included in the analysis. Emissions taken into account in the analysis include transportation and support requirements occurring outside of NFS lands and public lands managed by the BLM necessary to complete the activities on NFS lands and public lands managed by the BLM, which include indirect emissions as defined in 40 CFR 93.152. On-site air pollutant emissions during construction would principally consist of exhaust emissions from heavy-duty diesel- and gasoline-powered construction equipment, as well as fugitive particulate matter from earthmoving and material handling operations, which include direct emissions as defined in 40 CFR 93.152. Off-site exhaust emissions would result from workers commuting to and from the job site, as well as from trucks delivering material and equipment to the job sites within USFS and BLM lands. Both the proposed Project's direct and indirect emissions, as required by statute (40 CFR 93.153(b)), are included in the construction emission estimates.

Criterion AIR-5: Odor Significance Criteria. The Project would result in a significant odor impact if it would subject a substantial number of sensitive individuals to objectionable odors.

Criterion AIR-6: Global Climate Change Significance Criteria. The California Office of Planning and Research has adopted significance criteria for global climate change impacts. Although NEPA does not address global climate change specifically, both the U.S. Department of the Interior, Bureau of Land Management (BLM) and U.S. Department of Agriculture, Forest Service (USFS) have adopted guidance for addressing climate change in NEPA documents (BLM 2009; USFS 2009). The analysis follows current BLM and USFS guidance. Under SCAQMD draft guidelines, the Project would result in a significant impact to global climate change if it exceeded the Tier 3 threshold of 10,000 metric tons of carbon dioxide equivalent (CO_2e) per year proposed by the SCAQMD.

Project air quality impacts were evaluated on the basis of these significance criteria.

Mitigation Planning

Project construction equipment and vehicles would be required to adhere to emission limitations set forth by the ARB and, if applicable, by the local air district which regulates emissions from these sources. In an effort to reduce adverse and potentially significant impacts under CEQA, mitigation measures have been proposed and are described below in Table 4.2.1-3.

TABLE 4.2.1-3. MITIGATION MEASURES – AIR QUALITY AND CLIMATE CHANGE

Mitigation Measure	Description
AIR-2a	*Implement Construction Fugitive Dust Control Plan.* The construction contractor shall develop a Fugitive Dust Emission Control Plan for construction work. Measures to be incorporated into the plan include, but are not limited to, the following where practical: • Water the disturbed areas of the active construction sites in sufficient quantities to prevent the generation of visible dust plumes. Watering may not be required in wet weather. Soil binders may be used in lieu of watering where soil binders are appropriate and prevent the generation of visible dust plumes. • Enclose, cover, or apply water a minimum of twice daily to exposed piles with a five percent or greater silt content.

Mitigation Measure	Description
	• ARB-certified and agency-approved (on federal lands) non-toxic soil binders shall be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction (as allowed by responsible agencies such as the USFS and BLM) to reduce fugitive dust emissions. Other watering products, selected from lists available from the Environmental Protection Agency's (EPA's) Environmental Technology Verification program or the SCAQMD, may be applied per manufacturer recommendations in place of the ARB-certified soil binders if such products can be reasonably demonstrated to be as effective as the ARB-certified non-toxic soil binders and be approved by the affected federal agency. • Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8-hour work day]; OR Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour. Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface, to reduce fugitive dust emissions. • All vehicle tires shall be inspected, are to be free of dirt, and washed as necessary before entering paved roadways. In lieu of washing vehicle tires, the construction contractor may sweep roads on a regular basis or employ similar methods to reduce dust track-out. • Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit unpaved areas. • Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard. • Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) as appropriate or otherwise create stabilized surfaces on all unpaved areas at each of the construction sites after active construction operations have ceased. • Increase the frequency of watering unpaved surfaces under active construction to more than three times daily, or implement other additional fugitive dust mitigation measures, to all active disturbed fugitive dust emission sources as required by SCAQMD Rule 403 before wind events.) • Travel routes to each construction site shall be developed to minimize unpaved road travel. • Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions. • Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions. • Prevent spillage when hauling loose material by limiting speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.
AIR-2b	**Properly Maintain Mechanical Equipment.** The construction contractor shall ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturer's specifications to the extent feasible, and is maintained to perform at ARB and/or EPA certification levels. The construction contractor shall prevent tampering with equipment. This measure will be verified through unscheduled inspections.
AIR-2c	**Use Ultra Low-sulfur Diesel Fuel**. ARB-certified ultra low-sulfur diesel (ULSD) fuel containing 15 ppm sulfur or less shall be used in all diesel-powered construction equipment to the extent feasible.
AIR-2d	**Restrict Diesel Engine Idling to Five Minutes.** In accordance with LADWP's Environmental Affairs Bulletin 2007-05 dated March 12, 2007, and in accordance with the requirements of the ARB's idling regulations, vehicles with a gross vehicle weight rating (GVWR) of greater than 10,000 pounds "shall not idle the vehicle's primary diesel engine for greater than five minutes at any location." This measure will be verified by LADWP through unscheduled inspections. The five-minute idling limit does not apply for the period during which: • Idling must occur due to traffic conditions. • Idling when the vehicle is queuing that at all times is more than 100 feet from any real property zoned for individual or multifamily housing units that has one or more such units on it. • Idling when forced to remain motionless due to immediate adverse weather conditions. • Idling to verify that the vehicle is in safe operating condition. • Idling is required for mandatory resting, servicing, repairing, or diagnostic purposes.

Mitigation Measure	Description
	• Idling when positioning or providing a power source for equipment or operations other than transporting passengers or propulsion. • Idling while operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.
AIR-2e	**Schedule Deliveries Outside of Peak Traffic Hours.** All material deliveries to the marshalling yards and from the marshalling yards to the construction sites shall be scheduled outside of peak traffic hours (6:00 to 9:30 a.m. and 3:30 to 6:30 p.m.) to the extent feasible, and other truck trips during peak traffic hours shall be minimized to the extent feasible. Construction scheduling will be planned to minimize vehicle trips.
AIR-2f	**Off-road Diesel-fueled Equipment Standards.** During Project construction, all internal combustion engines/construction equipment operating on the Project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the following: • January 1, 2012 to December 31, 2014: all offroad diesel-powered construction equipment greater than 50 hp shall meet Tier 3 offroad emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. • Post-January 1, 2015: All offroad diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. • A copy of each unit's certified tier specification, BACT documentation, and ARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment. • Encourage construction contractors to apply for AQMD "SOON" funds. Incentives will be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean up of offroad diesel vehicles, such as heavy duty construction equipment. • Alternative fuels such as natural gas and electricity shall be used where available and feasible. This measure will be implemented through development of administrative controls, including: • Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking; • Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and • Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which the construction contractor will minimize impacts to these populations (e.g., locate construction equipment and staging zones away from sensitive receptors and building air intakes). • Provide advanced notification to sensitive receptors of the potential effects of PM_{10} and $PM_{2.5}$, as well as toxic air contaminants, prior to construction.
AIR-2g	**On-road Vehicles Standards.** All on-road construction vehicles shall meet all applicable California on-road emission standards and shall be licensed in the State of California. This does not apply to construction worker personal vehicles.
AIR-2h	**Off-road Gasoline-fueled Equipment Standards.** All off-road stationary and portable gasoline powered equipment shall have EPA Phase 1/Phase 2 compliant engines, where the specific engine requirement shall be based on the new engine standard in effect two years before initiating Project construction.

Mitigation Measure	Description
AIR-4a	**General Conformity Offset Mitigation.** If the final emission estimate for the selected Project Alternative as provided in the Project's Conformity Analysis exceeds the NOx and/or VOC emission applicability thresholds, and assuming the SCAQMD does not provide confirmation that the Project's emissions are accounted for in the State Implementation Plan (SIP) emission estimates per 40 CFR 93.158(a)(1), then the Project will obtain emission reduction credits to fully offset the NOx and/or VOC emissions per 40 CFR 93.158(a)(2) for the years that the Project has been estimated to exceed the NOx and/or VOC emission applicability thresholds. Credits shall be submitted to the BLM and USFS for review and approval.

Summary of Impact Analysis Results

No Action Alternative

Under the No Action Alternative, the BRRTP would not be constructed. No emissions would occur with this Alternative. The No Action Alternative would not allow the import of alternative energy by the LADWP into their service area through this transmission route, and would therefore not meet the Project goals. Any reductions in basin-wide operational emissions that would be realized from the Project would not occur under the No Action Alternative.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV Transmission Line structures between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant.

The addition of a new circuit on existing towers would require many of the same activities of a new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). All work would be within existing ROW, and existing access and spur roads would be utilized.

Air Quality Management Plan Conformance (Criterion AIR-1)

As discussed in Chapter 3, the new 230 kV circuit would be entirely within SCAQMD jurisdiction . Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the SCAB.

Regional Emission Thresholds (Criterion AIR-2)

Construction Emissions. Construction of the new 230 kV circuit would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for the new 230 kV circuit are presented in the Air Quality Technical Report (see Volume III of this Final EIS/EIR).

Operational Emissions. Operation of the future 230 kV circuit would have no impact, as the additional circuit would not change the activities associated with operation of the existing transmission line.

Toxic Air Contaminants (Criterion AIR-3)
While the construction of the new 230 kV circuit would generate criteria pollutant emissions as shown in Appendix A of the Air Quality Technical Report, the new 230 kV circuit would cover a large area and would not generate large quantities of emissions at any one site, as would a major stationary source, nor would it generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, the construction of the new 230 kV circuit would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-3, and the temporary nature of construction at each location, impacts to sensitive receptors in the SCAB along the new 230 kV circuit would be less than significant.

Federal General Conformity (Criterion AIR-4)
Approximately 300 feet of BLM-managed public lands and four miles of NFS lands would be traversed by the new 230 kV circuit. The contribution of emissions from construction of the new 230 kV circuit has been included in the evaluation of conformity for each Alternative, as discussed in the following sections.

Odors (Criterion AIR-5)
Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for construction of the new 230 kV circuit, the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)
The greenhouse gas (GHG) emissions estimated for construction activities for the new 230 kV circuit are included in the analysis for each Alternative, as global climate change impacts are cumulative.

Reconductoring of BR-RIN Transmission Line
LADWP proposes the reconductoring of 76 miles of the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi.

Air Quality Management Plan Conformance (Criterion AIR-1)
The reconductoring would occur within the jurisdiction of the EKAPCD, AVAQMD, and SCAQMD. Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB and SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB and SCAB.

Regional Emission Thresholds (Criterion AIR-2)
Construction Emissions. Reconductoring would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for reconductoring are presented in the Air Quality Technical Report (see Volume III of this Final EIS/EIR).

Operational Emissions. Operation of the reconductored transmission line would have no impact, as the additional circuit would not change the activities associated with operation of the existing transmission line.

Toxic Air Contaminants (Criterion AIR-3)
While the reconductoring would generate criteria pollutant emissions as shown in Appendix A of the Air Quality Technical Report, reconductoring activities would cover a large area and would not generate large quantities of emissions at any one site, as would a major stationary source, nor would they generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, the reconductoring would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-3, and the temporary nature of construction at each location, impacts to sensitive receptors in the MDAB and SCAB along the reconductored transmission line would be less than significant.

Federal General Conformity (Criterion AIR-4)
The reconductoring would occur over both BLM and NFS lands, and would be subject to the General Conformity Rule. The contribution of emissions from reconductoring has been included in the evaluation of conformity for each Alternative, as discussed in the following sections.

Odors (Criterion AIR-5)
Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for reconductoring, the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)
The greenhouse gas (GHG) emissions estimated for construction activities for reconductoring are included in the analysis for each Alternative, as global climate change impacts are cumulative.

New Haskell Canyon Switching Station

LADWP proposes the construction of a new switching station in Haskell Canyon, south of the Angeles National Forest on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon).

Air Quality Management Plan Conformance (Criterion AIR-1)
The Haskell Canyon Switching Station would be entirely within the jurisdiction of the SCAQMD. Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the SCAB.

Regional Emission Thresholds (Criterion AIR-2)
Construction Emissions. Construction of the Haskell Canyon Switching Station would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for construction of the Haskell Canyon Switching Station are presented in the Air Quality Technical Report (see Volume III of this Final EIS/EIR).

Operational Emissions. Operation of the Haskell Canyon Switching Station would have a negligible impact on air quality, as the only operational requirements would be inspection and maintenance activities.

Toxic Air Contaminants (Criterion AIR-3)
While the construction of the Haskell Canyon Switching Station would generate criteria pollutant emissions as shown in Appendix A of the Air Quality Technical Report, construction activities would not generate large quantities of emissions, as would a major stationary source, nor would they generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). The construction of the Haskell Canyon Switching Station would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from the construction site, implementation of mitigation measures proposed for Criterion AIR-3, and the temporary nature of construction, impacts to sensitive receptors in the SCAB in the vicinity of the Haskell Canyon Switching Station would be less than significant.

Federal General Conformity (Criterion AIR-4)
The construction of the Haskell Canyon Switching Station would not occur within federal lands, and would not be subject to the General Conformity Rule.

Odors (Criterion AIR-5)

Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)

The greenhouse gas (GHG) emissions estimated for construction activities for the Haskell Canyon Switching Station are included in the analysis for each Alternative, as global climate change impacts are cumulative.

Expansion of Barren Ridge Switching Station

LADWP proposes expansion of the existing Barren Ridge Switching Station to the east side by 235 feet, for a total station size of 485 feet by 500 feet (approximately 5.7 acres). The expansion area of the station would include additional electrical structures for additional lines, a material staging area, a roadway within the station, and a drainage area.

Air Quality Management Plan Conformance (Criterion AIR-1)

The expansion of the Barren Ridge Switching Station would occur entirely within the jurisdiction of the EKAPCD. Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB.

Regional Emission Thresholds (Criterion AIR-2)

Construction Emissions. Expansion of the Barren Ridge Switching Station would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for expansion of the Barren Ridge Switching Station are presented in the Air Quality Technical Report (see Volume III of this Final EIS/EIR).

Operational Emissions. Operation of the expanded Barren Ridge Switching Station would have no impact, as the additional circuit would not change the activities associated with operation of the existing switching station.

Toxic Air Contaminants (Criterion AIR-3)

While the expansion of the Barren Ridge Switching Station would generate criteria pollutant emissions as shown in Appendix A of the Air Quality Technical Report, construction activities would not generate large quantities of emissions, as would a major stationary source, nor would they generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). The expansion of the Barren Ridge Switching Station would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from construction at any given receptor area would be well below the EKAPCD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from the construction site, implementation of mitigation measures proposed for Criterion AIR-3, and the temporary nature of construction, impacts to sensitive receptors in the MDAB in the vicinity of the Barren Ridge Switching Station would be less than significant.

Federal General Conformity (Criterion AIR-4)
The expansion of the Barren Ridge Switching Station would not occur within federal lands, and would not be subject to the General Conformity Rule.

Odors (Criterion AIR-5)
Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)
The greenhouse gas (GHG) emissions estimated for construction activities for the Barren Ridge Switching Station are included in the analysis for each Alternative, as global climate change impacts are cumulative.

Installation of Spherical Markers on Ground Wires
The installation of spherical markers on ground wires would result in negligible additional air quality and greenhouse gas emissions for any of the action Alternatives. Such minor additional emissions would not result in any significance thresholds being exceeded, or change the impact assessment for any of the action Alternatives. This is primarily due to marker ball installation being limited to areas where conductors would be located over 200 feet above ground level.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

The approximate total mileage of the Alternative 1 230 kV transmission line would be 83 miles. Within the Angeles National Forest (ANF) where access is limited, helicopter construction would be utilized as a mitigation measure to reduce the need for construction of new access roads to towers as described in detail within Chapter 2.

Air Quality Management Plan Conformance (Criterion AIR-1)
As discussed in Chapter 3, portions of the Alternative 1 transmission line would be within the jurisdiction of the EKAPCD, AVAQMD, and SCAQMD. Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB and SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB or SCAB.

Regional Emission Thresholds (Criterion AIR-2)

Construction Emissions. Construction of Alternative 1 transmission line would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for the Alternative 1 transmission line are presented in the Air Quality Technical Report (see Volume III of this Final EIS/EIR).

A summary of the emissions for Alternative 1, including the common Project components and the 230 kV double-circuit transmission line is presented in Table 4.2.1-4.

TABLE 4.2.1-4. ALTERNATIVE 1—PROJECT MAXIMUM DAILY CONSTRUCTION EMISSIONS AND COMPARISON WITH REGIONAL SIGNIFICANCE THRESHOLDS[A]

Air Basin	Emissions					
	ROG	CO	NO$_X$	SO$_X$[b]	PM$_{10}$	PM$_{2.5}$
2012 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**139.11**	**1,495.14**	**778.98**	**1.41**	**1374.9**	**193.1**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**Yes**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**46.37**	**498.38**	**259.66**	**0.47**	**469.09**	**66.63**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**No**	**No**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**267.09**	**1339.24**	**1169.83**	**9.28**	**231.75**	**78.53**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
2014 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**369.68**	**2010.68**	**1767.64**	**10.7**	**1682.66**	**288.01**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**Yes**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**303.62**	**1794.46**	**1480.23**	**8.31**	**1672.53**	**273.57**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**347.10**	**1956.45**	**1707.67**	**9.67**	**1904.07**	**311.4**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

[a] Emissions include emissions from diesel construction equipment (using low-sulfur diesel fuel), gasoline-powered construction equipment, helicopters powered with aviation fuel, and on-road vehicles using gasoline and diesel as fuels.

[b] As PM$_{2.5}$ Precursor

As shown in Table 4.2.1-4, maximum daily emissions in 2013 are above the regional significance thresholds for NOx in the AVAQMD and for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$ in the SCAQMD. Maximum daily emissions in 2014 would be above the regional significance thresholds for ROG, CO, NOx, and PM_{10} in the AVAQMD and above the regional significance thresholds for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$ in the SCAQMD. Maximum daily construction emissions would be below the significance thresholds for all other periods and pollutants. Mitigation measures AIR2a, AIR-2b, AIR-2c, AIR-2d, AIR-2e, AIR-2f, AIR-2g, and AIR-2h are proposed to reduce emissions of criteria pollutants to the maximum extent feasible (Table 4.2.1-3).

Operational Emissions. Operational emissions are associated with routine inspection and maintenance activities. They would be minor and not exceed daily and annual emission significance thresholds.

Toxic Air Contaminants (Criterion AIR-3)
Most of the construction route through the SCAB and MDAB for the Alternative 1 transmission line would be in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals. The portions of the route within the MDAB and in the northern part of the SCAB have very low residential populations, and there are no schools near any of the construction sites within the MDAB or SCAB. As discussed in Section 4.2.3, Land Use, areas adjacent to and within the impact corridor for the Alternative 1 transmission line are used for utilities (including access roads) as well as institutional (church), and industrial facilities. Public, private, and military airports and air fields are also close to the Alternative 1 transmission line.

While the construction of Alternative 1 would generate large quantities of criteria pollutant emissions as shown in Table 4.2.1-7 and Appendix A of the Air Quality Technical Report, Alternative 1 would cover a very large area and would not generate large quantities of emissions at any one site, such as a major stationary source, nor would it generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, Alternative 1 construction would occur over a limited period of time, which would further reduce the long term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from Alternative 1 construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-3, and the temporary nature of construction at each location, impacts to sensitive receptors in the MDAB and SCAB along Alternative 1 would be less than significant.

Federal General Conformity (Criterion AIR-4)
The estimated annual emissions subject to the General Conformity Rule (in federal lands) compared to the respective General Conformity *de minimis* thresholds are presented in Table 4.2.1-5.

TABLE 4.2.1-5. ALTERNATIVE 1—PROJECT ANNUAL CONSTRUCTION EMISSIONS AND COMPARISON WITH GENERAL CONFORMITY *DE MINIMIS* THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X [a]	PM_{10}	$PM_{2.5}$
2012 Annual Emissions, tpy						
EKAPCD						
Total	**1.06**	**13.93**	**4.75**	**0.01**	**7.19**	**1.19**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
N/A						
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**No**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**1.50**	**18.92**	**6.99**	**0.01**	**10.73**	**1.62**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Annual Emissions, tpy						
EKAPCD						
Total	**3.18**	**35.35**	**17.13**	**0.03**	**36.24**	**5.60**
Total in Federal Lands	**1.27**	**4.61**	**5.19**	**0.04**	**2.60**	**0.64**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**0.90**	**10.08**	**4.79**	**0.01**	**11.42**	**1.71**
Total in Federal Lands	**0**	**0**	**0**	**0**	**0**	**0**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**8.17**	**43.96**	**37.38**	**0.26**	**20.88**	**4.49**
Total in Federal Lands	**5.84**	**31.41**	**26.70**	**0.19**	**14.92**	**3.21**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes**[b]	**No**	**No**	**No**
2014 Annual Emissions, tpy						
EKAPCD						
Total	**12.17**	**46.35**	**52.79**	**0.4**	**24.07**	**6.14**
Total in Federal Lands	**1.27**	**4.61**	**5.19**	**0.04**	**2.60**	**0.64**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**4.22**	**20.17**	**19.75**	**0.13**	**16.32**	**3.13**
Total in Federal Lands	**0.87**	**3.38**	**3.92**	**0.03**	**1.65**	**0.44**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**8.44**	**32.99**	**38.08**	**0.29**	**18.21**	**4.75**

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X [a]	PM_{10}	$PM_{2.5}$
Total in Federal Lands	**4.65**	**16.56**	**20.56**	**0.16**	**5.71**	**2.00**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes[b]**	**No**	**No**	**No**

[a] As $PM_{2.5}$ Precursor [b] For portion in federal lands only

As shown in Table 4.2.1-5, annual construction emissions for the portion of Alternative 1 on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012. In 2013 and 2014, emissions of NOx would be above the 10 tons per year *de minimis* NOx threshold. Mitigation measure AIR-4a is proposed to provide assurance that Alternative 1 would comply with the General Conformity Rule and be shown to conform to the SIP (Table 4.2.1-3).

LADWP would have several options for obtaining emission offset mitigation, including:

- Traditional NOx emission reduction credits (ERCs) that are in units of lbs/day, where 1 lb/day equals 365 lbs/year. These credits can now be subdivided into short-term yearly credits for purchase. These credits are available at market based prices that can be very expensive.
- Reclaim Trading Credits (RTCs) that are in units of lbs and are year-specific. These credits have historically been much less expensive than traditional ERCs.
- Creation of new emission reduction credits, such as mobile source emission reduction credits (MSERCs), where considered enforceable by the EPA for purposes of General Conformity offsets, through methods such as the SCAQMD Regulation XVI Mobile Source Offset Programs or other methods similar to existing stationary source control programs, such as the Carl Moyer Program.

While there are many options to obtain the necessary offset credits to comply with Mitigation Measure AIR-4a, it is likely that RTCs would make up the bulk of the credits that LADWP obtains, which should reduce the cost impact of this mitigation measure.

To further reduce impacts from ozone due to helicopter emissions, the EPA recommends best available emission control technologies, and scheduling heavy helicopter usage primarily in the fall and winter months, when ozone formation is lowest.

Odors (Criterion AIR-5)

Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for the Alternative 1 transmission line, the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)
The greenhouse gas (GHG) emissions estimated for construction activities for Alternative 1, including the common Project components and the 230 kV double-circuit transmission line, are provided in Table 4.2.1-6. Calculations and assumptions are provided in the Air Quality Technical Report.

TABLE 4.2.1-6. ALTERNATIVE 1 CONSTRUCTION GHG EMISSIONS—ANNUAL EMISSIONS, METRIC TONS/YEAR

	Emissions			
	CO_2	CH_4	N_2O	CO_2E
2012 Annual Emissions, metric tons per year				
Total	1,460	0.17	0.94	1,755
			Amortized Construction Emissions	59
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2013 Annual Emissions, metric tons per year				
Total	11,024	0.6	2.34	11,763
			Amortized Construction Emissions	392
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2014 Annual Emissions, metric tons per year				
Total	28,937	0.99	1.34	29,308
			Amortized Construction Emissions	977
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No

As shown in Table 4.2.1-6, emissions of GHGs would be less than the SCAQMD Tier 3 threshold, and would therefore be less than significant.

Operational GHG Emissions: During operation of Alternative 1, minor quantities of direct long-term GHG emissions, in the form of SF_6 equipment leak emissions, would occur from the Project. Inspection and maintenance activities would also cause a small increase in GHG emissions.

One purpose of the BRRTP is to provide access to renewable energy sources, thus reducing the amount of energy generated through conventional means within the LADWP service area. The indirect GHG emissions decrease that would result from the Project has been calculated using an estimate from LADWP of the renewable energy enabled by the Project. Based on the LADWP's Integrated Resource Plan (LADWP 2007), it is estimated that the BRRTP would provide access to approximately 1,000 MW of renewable power. The estimated annual direct and indirect operational GHG emissions are provided in Table 4.2.1-7. Calculations and assumptions are summarized in the Air Quality Technical Report.

TABLE 4.2.1-7. OPERATIONAL GHG EMISSIONS—ANNUAL EMISSIONS, METRIC TONS/YEAR

Source	CO_2	CH_4	N_2O	CO_2e
Inspection and Maintenance	320	0.03	0.16	**370**
Indirect Emissions Decrease	-3,491,524	-26.62	-14.70	**-3,496,641**
Net GHG Emissions	-3,491,204	-26.59	-14.54	**-3,496,271**

Direct operating GHG emissions associated with the BRRTP would be minor and would create a substantial indirect emission decrease that, even considering the Project's construction GHG emissions, would create an overall GHG emissions decrease over the Project's life. Given the Project's purpose to meet the renewable energy goals in the LADWP service area, the Project would be consistent with the goals of AB 32 and would not result in a significant adverse impact on global climate.

Alternative 2

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

The approximate total mileage of the Alternative 2 transmission line route would be 61 miles.

Air Quality Management Plan Conformance (Criterion AIR-1)
Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB and SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB or SCAB.

Regional Emission Thresholds (Criterion AIR-2)
Construction Emissions. Construction of the Alternative 2 transmission line would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for the Alternative 2 transmission line are presented in the Air Quality Technical Report.

A summary of the emissions for Alternative 2, including the common Project components and the 230 kV double-circuit transmission line, is presented in Table 4.2.1-8.

TABLE 4.2.1-8. ALTERNATIVE 2—PROJECT MAXIMUM DAILY CONSTRUCTION EMISSIONS AND COMPARISON WITH REGIONAL SIGNIFICANCE THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X[a]	PM_{10}	$PM_{2.5}$
2012 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**92.74**	**996.76**	**519.32**	**0.94**	**902.94**	**125.86**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**107.06**	**1,122.10**	**635.21**	**1.14**	**1205.03**	**161.46**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**No**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**60.69**	**623.72**	**375.55**	**0.67**	**753.56**	**98.53**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
2014 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**369.68**	**2010.68**	**1767.64**	**10.7**	**1682.66**	**288.01**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**Yes**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**303.62**	**1794.46**	**1480.23**	**8.31**	**1672.53**	**273.57**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**347.10**	**1956.45**	**1707.67**	**9.67**	**1904.07**	**311.4**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

[a] As $PM_{2.5}$ Precursor

As shown in Table 4.2.1-8, maximum daily construction emissions in 2013 would be above the regional significance thresholds for CO, NOx and PM_{10} in both the AVAQMD and the SCAQMD, and above the regional significance threshold for $PM_{2.5}$ in the SCAQMD. Maximum daily emissions in 2014 would be above the regional significance thresholds for ROG in the EKAPCD; ROG, CO, NOx, and PM_{10} in the AVAQMD; and above the regional significance thresholds for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$ in the SCAQMD. Maximum daily construction emissions would be below the significance thresholds for all other periods and pollutants. The mitigation measures discussed under Alternative 1 are proposed for Alternative 2 to reduce emissions of criteria pollutants to the maximum extent feasible.

Operational Emissions. Operational emissions are associated with routine inspection and maintenance activities. They would be minor and not exceed daily and annual emission significance thresholds.

Thresholds for Toxic Air Contaminants (Criterion AIR-3)
Most of the construction route through the SCAB and MDAB for the Alternative 2 transmission line would be in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals. The portions of the route within the MDAB and in the northern part of the SCAB have very low residential populations, and no schools would be near any of the construction sites within the MDAB or SCAB. The Alternative 2 transmission line corridor is proximate to existing residential uses. Other portions of the impact corridor are used for non-residential uses such as agriculture, including livestock grazing and apiaries, resource management, and recreational purposes. Areas adjacent to the impact corridor are used for commercial, public use, utilities (including access roads), and industrial facilities. Public and private airports are also close to the Alternative 2 transmission line.

While the construction of Alternative 2 would generate large quantities of criteria pollutant emissions as shown in Table 4.2.1-10 and Appendix A of the Air Quality Technical Report, Alternative 2 would cover a very large area and would not generate large quantities of emissions at any one site, such as a major stationary source, nor would it generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, Alternative 2 construction would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from Project construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-2, and the temporary nature of construction at each location, impacts to sensitive receptors in the MDAB and SCAB along Alternative 2 would be less than significant.

Federal General Conformity (Criterion AIR-4)
For a conservative analysis, it was assumed that construction of the Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station would commence in Year 1 (2012); construction of the new transmission line and completion of construction at the Barren Ridge Switching Station and Haskell Canyon Switching Station would occur in Year 2 (2013), and construction of the new circuit from Haskell Canyon to the Castaic Power Plant and reconductoring of the existing transmission line would occur in Year 3 (2014). The estimated annual emissions subject to the General Conformity Rule (in federal lands) compared to the respective General Conformity *de minimis* thresholds are presented in Table 4.2.1-9.

TABLE 4.2.1-9. ALTERNATIVE 2—PROJECT ANNUAL CONSTRUCTION EMISSIONS AND COMPARISON WITH GENERAL CONFORMITY *DE MINIMIS* THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X [a]	PM_{10}	$PM_{2.5}$
2012 Annual Emissions, tpy						
EKAPCD						
Total	**1.06**	**13.93**	**4.75**	**0.01**	**7.19**	**1.19**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**1.50**	**18.92**	**6.99**	**0.01**	**10.73**	**1.62**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Annual Emissions, tpy						
EKAPCD						
Total	**2.25**	**24.99**	**12.11**	**0.02**	**25.49**	**3.93**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**0.97**	**10.42**	**5.57**	**0.01**	**13.43**	**2.1**
Total in Federal Lands	**0.24**	**2.38**	**1.63**	**0.00**	**4.43**	**0.76**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**1.17**	**12.70**	**6.70**	**0.01**	**16.94**	**2.58**
Total in Federal Lands	**1.04**	**11.35**	**6.02**	**0.01**	**15.34**	**2.34**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2014 Annual Emissions, tpy						
EKAPCD						
Total	**12.17**	**46.35**	**52.79**	**0.4**	**24.07**	**6.14**
Total in Federal Lands	**1.27**	**4.61**	**5.19**	**0.04**	**2.60**	**0.64**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**4.22**	**20.17**	**19.75**	**0.13**	**16.32**	**3.13**
Total in Federal Lands	**0.87**	**3.38**	**3.92**	**0.03**	**1.65**	**0.44**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**8.44**	**32.99**	**38.08**	**0.29**	**18.21**	**4.75**
Total in Federal Lands	**4.65**	**16.56**	**20.56**	**0.16**	**5.71**	**2.00**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes**[b]	**No**	**No**	**No**

[a] As $PM_{2.5}$ Precursor

[b] For portion in Federal Lands only

As shown in Table 4.2.1-9, annual construction emissions for the portion of Alternative 2 on federal Lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the 10 tons per year *de minimis* NOx threshold . As discussed under Alternative 1, mitigation measure AIR-4a is proposed to provide assurance that the Project would comply with the General Conformity Rule and be shown to conform to the SIP.

To further reduce impacts from ozone due to helicopter emissions, the EPA recommends best available emission control technologies, and scheduling heavy helicopter usage primarily in the fall and winter months, when ozone formation is lowest.

Odors (Criterion AIR-5)

Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for Alternative 2, the minimal number of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)

The GHG emissions estimated for construction activities are provided in Table 4.2.1-10. Calculations and assumptions are provided in the Air Quality Technical Report.

TABLE 4.2.1-10. ALTERNATIVE 2 CONSTRUCTION GHG EMISSIONS—ANNUAL EMISSIONS, METRIC TONS/YEAR

	Emissions			
	CO_2	CH_4	N_2O	CO_2E
2012 Annual Emissions, metric tons per year				
Total	1,460	0.17	0.94	1,755
			Amortized Construction Emissions	59
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2013 Annual Emissions, metric tons per year				
Total	3,689	0.33	1.88	4,276
			Amortized Construction Emissions	143
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2014 Annual Emissions, metric tons per year				
Total	28,937	0.99	1.34	29,308
			Amortized Construction Emissions	977
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No

As shown in Table 4.2.1-10, emissions of GHGs would be less than the SCAQMD Tier 3 threshold, and would therefore be less than significant.

During operation of Alternative 2, minor quantities of direct long-term GHG emissions, in the form of SF_6 equipment leak emissions, would occur from the Project. Inspection and maintenance activities would also cause a small increase in GHG emissions.

Direct operating GHG emissions associated with the BRRTP would be minor and would create a substantial indirect emission decrease that, even considering the Project's construction GHG emissions, would create an overall GHG emissions decrease over the Project's life. Given the Project's purpose to meet the renewable energy goals in the LADWP service area, the Project would be consistent with the goals of AB 32 and would not result in a significant adverse impact on global climate. Refer to the Alternative 1 discussion of Operational GHG Emissions for additional discussion.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

The Alternative 2a transmission line would follow the same route as the Alternative 2 transmission line, with a variation that would travel around the unincorporated community of Green Valley. The approximate total mileage of this Alternative route would be 63 miles. Within the ANF where access is limited, helicopter construction would be utilized as a mitigation measure to reduce the need for construction of new access roads to towers.

Air Quality Management Plan Conformance (Criterion AIR-1)
Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB and SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB or SCAB.

Regional Emission Thresholds (Criterion AIR-2)
Construction Emissions. Construction of the Alternative 2a transmission line would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for Alternative 2a are presented in the Air Quality Technical Report.

A summary of the emissions for Alternative 2a, including the common Project components and the 230 kV double-circuit transmission line, is presented in Table 4.2.1-11.

TABLE 4.2.1-11. ALTERNATIVE 2A—PROJECT MAXIMUM DAILY CONSTRUCTION EMISSIONS AND COMPARISON WITH REGIONAL SIGNIFICANCE THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NOx	SOx[a]	PM_{10}	$PM_{2.5}$
2012 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**92.74**	**996.76**	**519.32**	**0.94**	**902.94**	**125.86**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**313.46**	**1,837.62**	**1,429.49**	**9.75**	**683.22**	**141.46**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**267.09**	**1339.24**	**1169.83**	**9.28**	**231.75**	**78.53**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
2014 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**369.68**	**2010.68**	**1767.64**	**10.7**	**1682.66**	**288.01**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**Yes**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**303.62**	**1794.46**	**1480.23**	**8.31**	**1672.53**	**273.57**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**347.10**	**1956.45**	**1707.67**	**9.67**	**1904.07**	**311.4**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

[a] As $PM_{2.5}$ Precursor

[b] Including emissions associated with helicopter construction as a mitigation measure

As shown in Table 4.2.1-11, maximum daily construction emissions in 2013 would be above the regional significance thresholds for ROG, CO, NOx, and PM_{10} in both the AVAQMD and the SCAQMD, and above the regional significance threshold for $PM_{2.5}$ in the SCAQMD. Maximum daily emissions in 2014 would be above the regional significance thresholds for ROG in the EKAPCD; ROG, CO, NOx, and PM_{10} in the AVAQMD; and above the regional significance thresholds for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$ in the SCAQMD. Maximum daily construction emissions would be below the significance thresholds for all other periods and pollutants. The mitigation measures discussed under Alternative 1 are proposed for Alternative 2a to reduce emissions of criteria pollutants to the maximum extent feasible.

Operational Emissions. Operational emissions are associated with routine inspection and maintenance activities. They would be minor and not exceed daily and annual emission significance thresholds.

Thresholds for Toxic Air Contaminants (Criterion AIR-3)
Most of the construction route through the SCAB and MDAB for the Alternative 2a would be in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals. The portions of the route within the MDAB and in the northern part of the SCAB have very low residential populations, and no schools would be near any of the construction sites within the MDAB or SCAB. Impacts associated with Alternative 2a would primarily be the same as impacts associated with the Alternative 2 transmission line. This Alternative transmission line, however, would introduce a reroute around the unincorporated community of Green Valley, eliminating many of the land use impacts that would occur in that community with the Alternative 2 transmission line, and moving construction activities away from residential properties that would be affected in the Green Valley community. With the exception of the unincorporated community of Green Valley, residential properties affected by the Alternative 2a transmission line would remain the same as those described for Alternative 2.

While the construction of Alternative 2a would generate large quantities of criteria pollutant emissions as shown in Table 4.2.1-13 and Appendix A of the Air Quality Technical Report, Alternative 2a would cover a very large area and would not generate large quantities of emissions at any one site, such as a major stationary source, nor would it generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, Alternative 2a construction would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from Project construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-2, and the temporary nature of construction at each location, impacts to sensitive receptors in the MDAB and SCAB along Alternative 2a would be less than significant.

Federal General Conformity (Criterion AIR-4)
For a conservative analysis, it was assumed that construction of the Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station would commence in Year 1 (2012); construction of the new transmission line and completion of construction at the Barren Ridge Switching Station and Haskell Canyon Switching Station would occur in Year 2 (2013), and construction of the new circuit from Haskell Canyon to the Castaic Power Plant and reconductoring of the existing transmission line would occur in Year 3 (2014). The estimated annual emissions subject to the General Conformity Rule (in federal lands) compared to the respective General Conformity *de minimis* thresholds are presented in Table 4.2.1-12.

TABLE 4.2.1-12. ALTERNATIVE 2A—PROJECT ANNUAL CONSTRUCTION EMISSIONS AND COMPARISON WITH GENERAL CONFORMITY *DE MINIMIS* THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO$_X$	SO$_X$ [a]	PM$_{10}$	PM$_{2.5}$
2012 Annual Emissions, tpy						
EKAPCD						
Total	**1.06**	**13.93**	**4.75**	**0.01**	**7.19**	**1.19**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**1.50**	**18.92**	**6.99**	**0.01**	**10.73**	**1.62**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Annual Emissions, tpy						
EKAPCD						
Total	**2.25**	**24.99**	**12.11**	**0.02**	**25.49**	**3.93**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**1.68**	**12.86**	**8.27**	**0.04**	**10.49**	**1.76**
Total in Federal Lands	**0.45**	**2.88**	**2.14**	**0.01**	**1.85**	**0.35**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**2.90**	**19.71**	**13.91**	**0.08**	**14.23**	**2.48**
Total in Federal Lands	**2.34**	**15.91**	**11.22**	**0.06**	**11.48**	**2.00**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes[b]**	**No**	**No**	**No**
2014 Annual Emissions, tpy						
EKAPCD						
Total	**12.17**	**46.35**	**52.79**	**0.4**	**24.07**	**6.14**
Total in Federal Lands	**1.27**	**4.61**	**5.19**	**0.04**	**2.60**	**0.64**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**4.22**	**20.17**	**19.75**	**0.13**	**16.32**	**3.13**
Total in Federal Lands	**0.87**	**3.38**	**3.92**	**0.03**	**1.65**	**0.44**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**8.44**	**32.99**	**38.08**	**0.29**	**18.21**	**4.75**
Total in Federal Lands	**4.65**	**16.56**	**20.56**	**0.16**	**5.71**	**2.00**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes[b]**	**No**	**No**	**No**

[a] As PM$_{2.5}$ Precursor
[b] For portion in Federal Lands only

As shown in Table 4.2.1-12, annual construction emissions for the portion of the Project on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed 10 tons per year *de minimis* NOx threshold. As discussed under Alternative 1, mitigation measure AIR-4a is proposed to provide assurance that the Project would comply with the General Conformity Rule and be shown to conform to the SIP.

To further reduce impacts from ozone due to helicopter emissions, the EPA recommends best available emission control technologies, and scheduling heavy helicopter usage primarily in the fall and winter months when ozone formation is lowest.

Odors (Criterion AIR-5)

Construction equipment and construction operations for the Alternative 2a transmission line would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for Alternative 2a, the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)

The GHG emissions estimated for construction activities are provided in Table 4.2.1-13. Calculations and assumptions are provided in the Air Quality Technical Report.

TABLE 4.2.1-13. ALTERNATIVE 2A CONSTRUCTION GHG EMISSIONS—ANNUAL EMISSIONS, METRIC TONS/YEAR

	Emissions			
	CO_2	CH_4	N_2O	CO_2E
2012 Annual Emissions, metric tons per year				
Total	1,460	0.17	0.94	1,755
Amortized Construction Emissions				59
SCAQMD Tier 3 Threshold				10,000
Above Threshold?				No
2013 Annual Emissions, metric tons per year				
Total	5,973	0.39	1.75	6,525
Amortized Construction Emissions				218
SCAQMD Tier 3 Threshold				10,000
Above Threshold?				No
2014 Annual Emissions, metric tons per year				
Total	28,937	0.99	1.34	29,308
Amortized Construction Emissions				977
SCAQMD Tier 3 Threshold				10,000
Above Threshold?				No

As shown in Table 4.2.1-13, emissions of GHGs would be less than the SCAQMD Tier 3 threshold, and would therefore be less than significant.

During operation of Alternative 2a, minor quantities of direct long-term GHG emissions, in the form of SF_6 equipment leak emissions, would occur from the Project. Inspection and maintenance activities would also cause a small increase in GHG emissions.

Direct operating GHG emissions associated with the BRRTP would be minor and would create a substantial indirect emission decrease that, even considering the Project's construction GHG emissions, would create an overall GHG emissions decrease over the Project's life. Given the Project's purpose to meet the renewable energy goals in the LADWP service area, the Project would be consistent with the goals of AB 32 and would not result in a significant adverse impact on global climate. Refer to the Alternative 1 discussion of Operational GHG Emissions for additional discussion.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

The approximate total mileage of the Alternative 3 transmission line route would be 76 miles.

Air Quality Management Plan Conformance (Criterion AIR-1)

Because the Project would be required to comply with all applicable Rules and Regulations, and no additional control measures have been identified that would apply to Project construction or operations in the MDAB and SCAB, the Project would not conflict with or obstruct the applicable air quality plans in the MDAB or SCAB.

Regional Emission Thresholds (Criterion AIR-2)

Construction Emissions. Construction of the Alternative 3 transmission line would result in short-term impacts to ambient air quality. Maximum daily and maximum annual emission calculation and assumptions for the Alternative 3 transmission line are presented in the Air Quality Technical Report.

A summary of the emissions for Alternative 3, including the common Project components and the 230 kV double-circuit transmission line, is presented in Table 4.2.1-14.

TABLE 4.2.1-14. ALTERNATIVE 3—PROJECT MAXIMUM DAILY CONSTRUCTION EMISSIONS AND COMPARISON WITH REGIONAL SIGNIFICANCE THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X[a]	PM_{10}	$PM_{2.5}$
2012 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**21.96**	**324.61**	**78.87**	**0.10**	**93.87**	**11.33**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**92.74**	**996.76**	**519.32**	**0.94**	**902.94**	**125.86**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**92.74**	**996.76**	**519.32**	**0.94**	**902.94**	**125.86**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Threshold?	**No**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**46.37**	**498.38**	**259.66**	**0.47**	**451.47**	**62.93**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**No**	**No**	**Yes**	**No**	**Yes**	**Yes**
2014 Maximum Daily Emissions, lbs/day						
EKAPCD						
Total	**369.68**	**2010.68**	**1767.64**	**10.7**	**1682.66**	**288.01**
Significance Threshold	137	N/A	N/A	N/A	N/A	N/A
Exceeds Threshold?	**Yes**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**303.62**	**1794.46**	**1480.23**	**8.31**	**1672.53**	**273.57**
Significance Threshold	137	548	137	137	82	N/A
Exceeds Thresholds?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**
SCAQMD						
Total	**347.10**	**1956.45**	**1707.67**	**9.67**	**1904.07**	**311.4**
Significance Threshold	75	550	100	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

[a] As $PM_{2.5}$ Precursor
[b] Including emissions associated with helicopter construction as a mitigation measure

As shown in Table 4.2.1-14, maximum daily construction emissions in 2013 would be above the regional significance thresholds for NOx and PM_{10} in both the AVAQMD and the SCAQMD; above the regional threshold for CO in the AVAQMD; and above the regional threshold for $PM_{2.5}$ in the SCAQMD. Maximum daily emissions in 2014 would be above the regional significance thresholds for ROG in the EKAPCD; ROG, CO, NOx, and PM_{10} in the AVAQMD; and above the regional significance thresholds for ROG, CO, NOx, PM_{10}, and $PM_{2.5}$ in the SCAQMD. Maximum daily construction emissions would be below the significance thresholds for all other periods and pollutants. The mitigation measures discussed under Alternative 1 are proposed for Alternative 3 to reduce emissions of criteria pollutants to the maximum extent feasible.

Operational Emissions. Operational emissions are associated with routine inspection and maintenance activities. They would be minor and not exceed daily and annual emission significance thresholds.

Thresholds for Toxic Air Contaminants (Criterion AIR-3)

Most of the construction route through the SCAB and MDAB for the Alternative 3 transmission line would be in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals. The portions of the route within the MDAB and in the northern part of the SCAB have very low residential populations, and no schools would be near any of the construction sites within the MDAB or SCAB. As discussed in Section 4.2.3, Land Use, residential properties are close to the Alternative 3 transmission line corridor. This Alternative has the highest number of residences close to the proposed ROW.

While the construction of Alternative 3 would generate large quantities of criteria pollutant emissions as shown in Table 4.2.1-16 and Appendix A of the Air Quality Technical Report, Alternative 3 would cover a very large area and would not generate large quantities of emissions at any one site, such as a major stationary source, nor would it generate large quantities of toxic air contaminants, with the potential exception of diesel particulate matter (DPM). Additionally, Alternative 3 construction would occur over a limited period of time, which would further reduce the long-term chronic exposures (carcinogenic and non-carcinogenic exposures) to DPM and other air toxic contaminants. Therefore, the risk from Project construction at any given receptor area would be well below the SCAQMD significance thresholds. Operation emissions of toxic air contaminants would be negligible and, as noted previously, the Project would result in an indirect net emission decrease that would lower risk from toxic air contaminants. Due to the lack of sensitive receptors, their distance from each construction site, implementation of mitigation measures proposed for Criterion AIR-2, and the temporary nature of construction at each location, impacts to sensitive receptors in the MDAB and SCAB along Alternative 3 would be less than significant.

Federal General Conformity (Criterion AIR-4)

For a conservative analysis, it was assumed that construction of the Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station would commence in Year 1 (2012); construction of the new transmission line and completion of construction at the Barren Ridge Switching Station and Haskell Canyon Switching Station would occur in Year 2 (2013), and construction of the new circuit from Haskell Canyon to the Castaic Power Plant and reconductoring of the existing transmission line would occur in Year 3 (2014). The estimated annual emissions subject to the General Conformity Rule (in federal lands) compared to the respective General Conformity *de minimis* thresholds are presented in Table 4.2.1-15.

TABLE 4.2.1-15. ALTERNATIVE 3—PROJECT ANNUAL CONSTRUCTION EMISSIONS AND COMPARISON WITH GENERAL CONFORMITY *DE MINIMIS* THRESHOLDS

Air Basin	Emissions					
	ROG	CO	NO_X	SO_X[a]	PM_{10}	$PM_{2.5}$
2012 Annual Emissions, tpy						
EKAPCD						
Total	**1.06**	**13.93**	**4.75**	**0.01**	**7.19**	**1.19**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**1.50**	**18.92**	**6.99**	**0.01**	**10.73**	**1.62**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
2013 Annual Emissions, tpy						
EKAPCD						
Total	**2.25**	**24.99**	**12.11**	**0.02**	**25.49**	**3.93**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**1.61**	**18.04**	**8.66**	**0.01**	**19.66**	**3.00**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**0.96**	**10.81**	**5.13**	**0.01**	**12.35**	**1.86**
Total in Federal Lands	**0.14**	**1.57**	**0.78**	**0.00**	**1.75**	**0.26**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**No**[b]	**No**	**No**	**No**
2014 Annual Emissions, tpy						
EKAPCD						
Total	**12.17**	**46.35**	**52.79**	**0.4**	**24.07**	**6.14**
Total in Federal Lands	**1.27**	**4.61**	**5.19**	**0.04**	**2.60**	**0.64**
General Conformity De Minimis Threshold	100		100			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
AVAQMD						
Total	**4.22**	**20.17**	**19.75**	**0.13**	**16.32**	**3.13**
Total in Federal Lands	**0.87**	**3.38**	**3.92**	**0.03**	**1.65**	**0.44**
General Conformity De Minimis Threshold	25		25			
Exceeds Threshold?	**No**	**N/A**	**No**	**N/A**	**N/A**	**N/A**
SCAQMD						
Total	**8.44**	**32.99**	**38.08**	**0.29**	**18.21**	**4.75**
Total in Federal Lands	**4.65**	**16.56**	**20.56**	**0.16**	**5.71**	**2.00**
General Conformity De Minimis Threshold	10	100	10	100	70	100
Exceeds Threshold?	**No**	**No**	**Yes**[b]	**No**	**No**	**No**

[a] As $PM_{2.5}$ Precursor

[b] For portion in Federal Lands only

As shown in Table 4.2.1-15, annual construction emissions for the portion of the Project on federal lands would be less than the *de minimis* thresholds for all pollutants in both the SCAB and the MDAB during 2012 and 2013. In 2014, emissions of NOx would be above the proposed 10 tons per year *de minimis* NOx threshold . As discussed under Alternative 1, mitigation measure AIR-4a is proposed to provide assurance that the Project would comply with the General Conformity Rule and be shown to conform to the SIP.

Odors (Criterion AIR-5)
Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. Because of the remote locations of most of the construction sites for Alternative 3, the lack of sensitive receptors in the immediate vicinity of construction activities, and the short-term nature of construction, odor impacts would be less than significant.

Global Climate Change (Criterion AIR-6)
The GHG emissions estimated for construction activities are provided in Table 4.2.1-16. Calculations and assumptions are provided in the Air Quality Technical Report.

TABLE 4.2.1-16. ALTERNATIVE 3 CONSTRUCTION GHG EMISSIONS—ANNUAL EMISSIONS, METRIC TONS/YEAR

	Emissions			
	CO_2	CH_4	N_2O	CO_2E
2012 Annual Emissions, metric tons per year				
Total	1,460	0.17	0.94	1,755
			Amortized Construction Emissions	59
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2013 Annual Emissions, metric tons per year				
Total	3,783	0.35	1.98	4,404
			Amortized Construction Emissions	147
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No
2014 Annual Emissions, metric tons per year				
Total	28,937	0.99	1.34	29,308
			Amortized Construction Emissions	977
			SCAQMD Tier 3 Threshold	10,000
			Above Threshold?	No

As shown in Table 4.2.1-16, emissions of GHGs would be less than the SCAQMD Tier 3 threshold, and would therefore be less than significant.

During operation of Alternative 3, minor quantities of direct long-term GHG emissions, in the form of SF_6 equipment leak emissions, would occur from the Project. Inspection and maintenance activities would also cause a small increase in GHG emissions.
Direct operating GHG emissions associated with the BRRTP would be minor and would create a substantial indirect emission decrease that, even considering the Project's construction GHG emissions, would create an overall GHG emissions decrease over the Project's life. Given the Project's purpose to meet the renewable energy goals in the LADWP service area, the Project

would be consistent with the goals of AB 32 and would not result in a significant adverse impact on global climate. Refer to the Alternative 1 discussion of Operational GHG Emissions for additional discussion.

Comparison of Alternatives

Table 4.2.1-17 provides a comparison of the impacts of each action Alternative. The No Action Alternative is not included in the table because no emissions would occur with this Alternative. Any reductions in basin-wide operational emissions that would be realized from the Project would not occur under the No Action Alternative.

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TABLE 4.2.1-17. SUMMARY OF IMPACTS AND COMPARISON OF ACTION ALTERNATIVES

	Significance Criterion																							
	Air Quality Management Plan Conformance				Regional Emission Thresholds				Thresholds for Toxic Air Contaminants				Federal General Conformity				Odors				Global Climate Change			
	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact
Alternative 1																								
EKAPCD			X				X				X				X				X				X	
AVAQMD			X		X (ROG, CO, NOx, PM$_{10}$)						X				X				X				X	
SCAQMD			X		X (ROG, CO, NOx, PM$_{10}$, PM$_{2.5}$)						X		X						X				X	
Alternative 2																								
EKAPCD			X		X (ROG)						X				X				X				X	

	Significance Criterion																							
	Air Quality Management Plan Conformance				**Regional Emission Thresholds**				**Thresholds for Toxic Air Contaminants**				**Federal General Conformity**				**Odors**				**Global Climate Change**			
	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact
AVAQMD			X		X (ROG, CO, NOx, PM_{10})						X				X				X				X	
SCAQMD			X		X (ROG, CO, NOx, PM_{10}, $PM_{2.5}$)						X		X						X				X	
Alternative 2a																								
EKAPCD			X		X (ROG)						X				X				X				X	
AVAQMD			X		X (ROG, CO, NOx, PM_{10})						X				X				X				X	

	Significance Criterion																							
	Air Quality Management Plan Conformance				**Regional Emission Thresholds**				**Thresholds for Toxic Air Contaminants**				**Federal General Conformity**				**Odors**				**Global Climate Change**			
	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact	Potentially Significant	Less than Significant with Mitigation	Less than Significant	No Impact
SCAQMD			X		X (ROG, CO, NOx,PM$_{10}$, PM$_{2.5}$)						X		X						X				X	
Alternative 3																								
EKAPCD			X		X (ROG)						X				X				X				X	
AVAQMD			X		X (ROG, CO, NOx,PM$_{10}$)						X				X				X				X	
SCAQMD			X		X (ROG, CO, NOx,PM$_{10}$, PM$_{2.5}$)						X		X						X				X	

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4.2.2 NOISE

Introduction

This section describes the noise impacts associated with the construction and operation of the Project. It outlines the methodology used to conduct the analysis, describes the existing environment related to power facility noise that occur in the study corridors, and identifies the regulations and standards that could apply to these topics.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in this Final EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to noise are addressed in this analysis:

- Potential for increased noise to unacceptable values; and construction and maintenance activities potential to increase noise for residents and trail users

Impact Assessment Methodology

This section provides an overview of the methodology used and the determinations made for noise impacts along the Proposed Action and Alternative routes, in terms of both construction and post-construction (maintenance) periods.

Construction Impacts

Table 4.2.2-1 lists the types of equipment used for transmission line construction and the anticipated noise levels. The noise levels were utilized in relationship to sensitive noise receptors, such as residences and parks, to identify potential noise impacts during construction.

TABLE 4.2.2-1. CONSTRUCTION NOISE SOURCES

Equipment	Range of Noise Levels (dB(A)) at 50 Feet	Range of Noise Levels (dB(A)) at 0.4 Mile
Earth Moving		
Front Loaders	66-93	40-52
Backhoes	72-92	40-61
Tractors, Dozers	68-93	44-64
Scrapers, Graders	72-92	48-61
Pavers	76-85	54-56
Trucks	65-92	54-62
Rollers	66-83	44-64
Material Handling		
Concrete Mixers	67-86	43-56
Concrete Pumps	68-81	49-51
Cranes (movable)	70-92	43-54
Cranes (derrick)	80-83	54-56
Forklifts	76-82	44-50
Tensioners	76-86	44-54
Cable Pullers	74-81	42-49
Pneumatic Tools		
Pneumatic Wrenches	84-88	51-56

Equipment	Range of Noise Levels (dB(A)) at 50 Feet	Range of Noise Levels (dB(A)) at 0.4 Mile
Jack Hammers and Rock Drills	72-93	49-66
Compactors	80-83	52-58
Helicopters		
Helicopter	90-100	80-90 at 150 feet

Corona Effects

For a conservative analysis, Audible and Radio Noise levels were calculated for minimum transmission line conductor heights. Typically the calculations are conducted for average conductor heights, but the difference between average and minimum conductor heights does not produce significant differences in the calculated noise levels. The minimum ground clearances used for the 69 kV, 115 kV, 230 kV, and 500 kV transmission lines range from 25 feet to 35 feet. Altitude plays an important role in the generation of conductor corona. Corona phenomenon increases one decibel (dB) for every 300-meter increase in altitude, or about 1 dB every 1000 feet. This correction factor was determined to be valid not only for radio interference (RI), but also for television interference (TVI) and audible noise (AN). This study assumed an average altitude of 2,000 feet based on the elevations of the cities/towns in all Alternatives. For the noise studies, the phasing of the single-phase circuits is A-B-C from left to right phases; for the double or vertical circuits, the phasing is A-B-C from bottom to top phases. For the double-circuit lines, the phasing would be the same for both circuits.

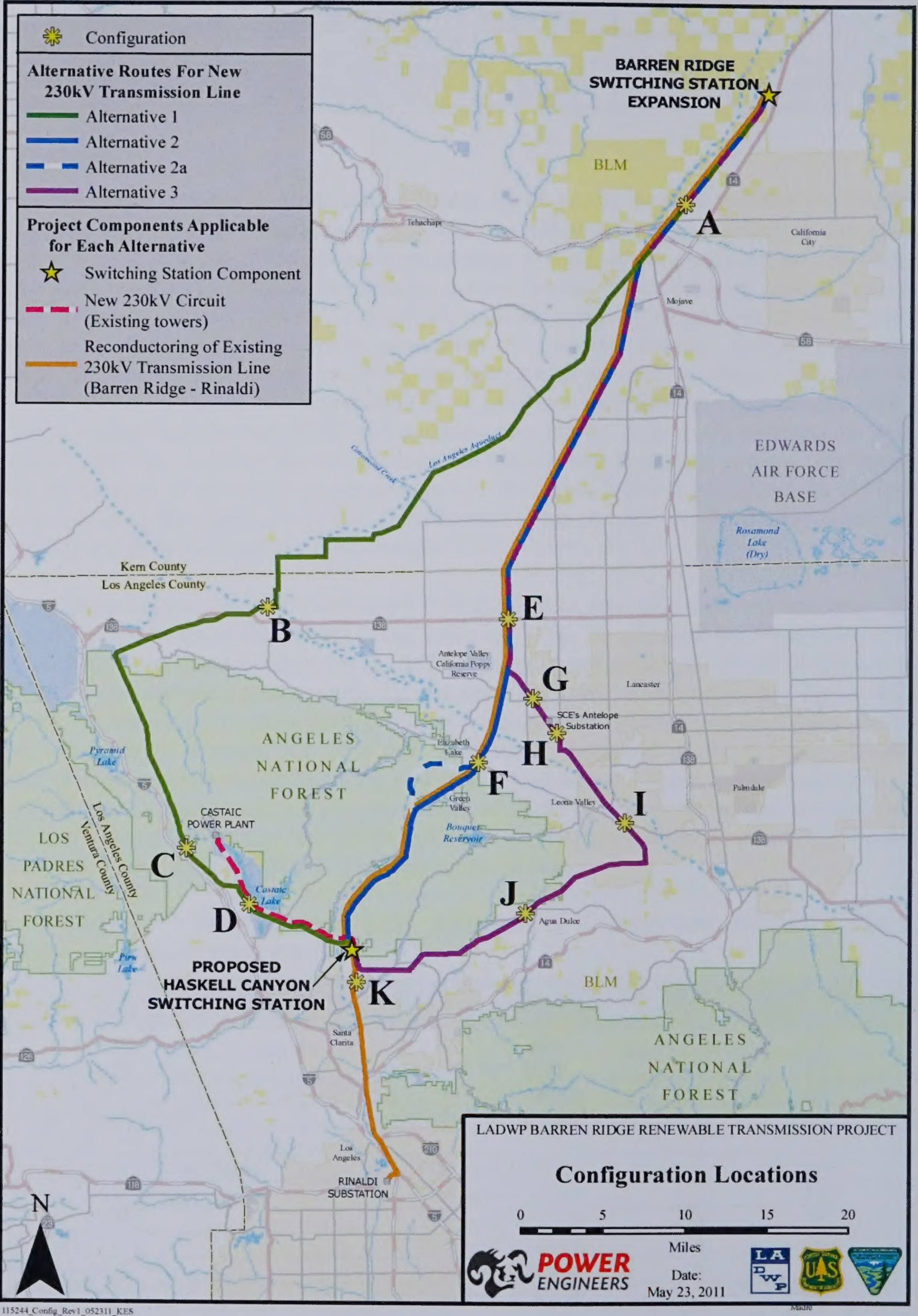
There are many existing transmission lines within the project area with different conductor types, sizes, and maximum operating voltages (see Table 4.2.2-2). To calculate the corona noise levels along each of the alternatives, eleven different line configurations (cross sections) were identified below and the corresponding figures may be found in Appendix L. Figure 4.2.1.1 illustrates the locations of those configurations. The action Alternatives each have the same project components—construction of a new substation, expansion of the existing substation, addition of a new circuit, reconductoring and addition of a new 230 kV transmission line. The new substation, expansion of existing substation, addition of a new circuit and reconductoring would be the same for each of the action Alternative. The only differences among the action Alternatives would be for the new 230 kV transmission line.

TABLE 4.2.2-2. TRANSMISSION LINE CIRCUITS - CONDUCTOR DESCRIPTIONS AND ELECTRICAL CHARACTERISTICS

Transmission Line	Conductor Type and Size	Maximum Operating Voltage (kV)
LADWP 115 kV Lines	250 MCM Copper	121
LADWP 500 kV Lines	2312 kcmil ACSR	545
New BRRTP 230 kV	2156 kcmil ACSS/AW	242
Barren Ridge – Rinaldi 230 kV	1433.6 kcmil ACSS/TW/HS	242
Three Circuit Line		
• New BRRTP 230 kV (Two Circuits)	2156 kcmil ACSS/AW	242
• Haskell – Rinaldi 230 kV	2156 kcmil ACSS/AW	242
Haskell – Rinaldi 230 kV	2156 kcmil ACSS/AW	242
Haskell – Sylmar 230 kV	2156 kcmil ACSS/AW	242
Haskell – Olive 230 kV	2156 kcmil ACSS/AW	242
Castaic – RS J 230 kV	2156 kcmil ACSS/AW	242

Transmission Line	Conductor Type and Size	Maximum Operating Voltage (kV)
LADWP 500 kV PDCI	2312 kcmil ACSR (Two Conductor Bundle)	500
SCE 66/69 kV	605 kcmil ACSR	72
SCE 220 kV	1590 kcmil ACSR	242
SCE 500 kV	2156 kcmil ACSR (Two Conductor Bundle)	550

FIGURE 4.2.1-1. CONFIGURATION LOCATIONS


Configuration
Alternative Routes For New 230kV Transmission Line
Alternative 1
Alternative 2
Alternative 2a
Alternative 3
Project Components Applicable for Each Alternative
Switching Station Component
New 230kV Circuit (Existing towers)
Reconductoring of Existing 230kV Transmission Line (Barren Ridge - Rinaldi)
BARREN RIDGE SWITCHING STATION EXPANSION
BLM
A
B
C
D
E
F
G
H
I
J
K
Tehachapi
California City
Mojave
EDWARDS AIR FORCE BASE
Rosamond Lake (Dry)
Los Angeles Aqueduct
Cottonwood Creek
Kern County
Los Angeles County
Antelope Valley California Poppy Reserve
Lancaster
SCE's Antelope Substation
Elizabeth Lake
Green Valley
Leona Valley
Palmdale
ANGELES NATIONAL FOREST
Pyramid Lake
CASTAIC POWER PLANT
Castaic Lake
Bouquet Reservoir
Agua Dulce
LOS PADRES NATIONAL FOREST
Los Angeles County
Ventura County
Piru Lake
PROPOSED HASKELL CANYON SWITCHING STATION
Santa Clarita
Los Angeles
RINALDI SUBSTATION
N
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Configuration Locations
0 5 10 15 20
Miles
POWER ENGINEERS
Date: May 23, 2011
W:\111502_LADWP Barren_RDG4\Apps\EIS\Chapter 4\Noise\Configuration_Location_8x11.mxd
115244_Config_Rev1_052311_KES

Configuration A
- North of Mojave, California
- Common to all action Alternatives
- New BRRTP 230 kV double-circuit transmission line
- Reconductored BR-RIN 230 kV single-circuit transmission line
- LADWP 500 kV PDCI single-circuit transmission line

Configuration B
- Located in Alternative 1 just north of the 138 freeway
- New BRRTP 230 kV double-circuit transmission line
- Existing 12 kV distribution line

Configuration C
- Located in Alternative 1 just west of Castaic Power Plant
- New BRRTP 230 kV double-circuit transmission line
- Three existing SCE 220 kV double-circuit transmission lines

Configuration D
- South side of Castaic Lake
- Common to all action Alternatives
- Two existing LADWP 230 kV double-circuit transmission lines (northern tower has one existing circuit and a vacant position)
- Addition of a new 230 kV circuit on northern tower
- The implementation of Alternative 1 would require the construction of a new double-circuit 230 kV transmission line to the south side of the existing towers.

Configuration E
- Located in Alternatives 2, 2a, and 3 at the intersection of the 138 freeway
- New BRRTP 230 kV double-circuit transmission line
- Reconductored BR-RIN 230 kV single-circuit transmission line
- SCE 220 kV single-circuit transmission line
- LADWP 500 kV PDCI single-circuit transmission line

Configuration F
- Located in Alternatives 2 and 2a in Elizabeth Lake
- Three-circuit structure 230 kV transmission line (includes new BRRTP 230 kV transmission line)
- LADWP 500 kV PDCI single-circuit transmission line

Configuration G
- Located in Alternative 3 north of the Antelope Substation
- New BRRTP 230 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 69 kV double-circuit transmission line

- SCE 220 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line

Configuration H
- Located in Alternative 3 south of Antelope Substation
- New BRRTP 230 kV double-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 220 kV single-circuit transmission line

Configuration I
- Located in Alternative 3 in Leona Valley
- New BRRTP 230 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 220 kV single-circuit transmission line

Configuration J
- Located in Alternative 3 in Agua Dulce
- New BRRTP 230 kV double-circuit transmission line
- LADWP 500 kV single-circuit transmission line
- LADWP 500 kV single-circuit transmission line

Configuration K
- Located in Santa Clarita
- Common to all action Alternatives
- Reconductoring of BR-RIN 230 kV transmission line
- Four-circuit structure 230 kV transmission line
- Existing LADWP 115 kV double-circuit transmission lines
- LADWP 500 kV PDCI single-circuit transmission line

Audible Noise

The AN effects of the transmission lines were calculated at the edge of the ROW. The AN L_{50} foul weather level represents a conservative estimate of transmission line noise that would occur 100% of the time. The National Oceanic and Atmospheric Administration (NOAA) reports[1] that there is a rain rate of approximately 7% of the year near the city of Lancaster. The AN L_{50} levels were calculated at a height of five feet above ground for a foul weather condition. A point of consideration is that audible noise levels for the BRRTP 230 kV and other AC transmission lines would be higher in foul weather conditions due to an increase of moisture present on the line, but ambient noise levels themselves would be increased due to AN generated from the foul weather itself. In general, the audible noise level of a transmission line decreases at a rate of 3 dB per doubling of distance from the transmission line.

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[1] National Oceanic and Atmospheric Administration. 2003. National Climatic Data Center. *Climatography of the United States* No. 81 Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1971 - 2000

Radio Noise

A radio noise (RN, refers to both RI and TVI) level of 40 dBμV/m (100 μV/m) at a lateral distance of 100 feet from the outermost phase has been established as a guideline for identifying an industry-accepted design criterion for RN limits (Institute of Electrical and Electronics Engineers [IEEE] Standard 430-1991). Adjusting this guideline by 2 dB to agree with present measurement standards gives an RN level criterion of 38 dBμV/m.

In comparison, Federal Communications Commission (FCC) regulations require a minimum daytime signal strength contour limit of 54 dBμV/m (0.5 mV/m) for the primary service area of Classes A, B, C, and D broadcasting signals (47 CFR 73). Therefore, the maximum permissible RN level would equate to 39 dBμV/m, which is less conservative than the IEEE Standard 430 design criterion of 38 dBμV/m.

Absent signal strength data for broadcasted radio signals in the area, RN levels calculated for the edge of the ROW were compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. If signal strength measurements are performed, measurement equipment that adheres to the International Electrotechnical Commission's International Special Committee on Radio Interference (IEC/CISPR) Publication 16 standards should be used so that accurate comparisons can be made against calculated RN levels.

LADWP High Voltage DC Pacific Intertie Transmission Line

In contrast to power losses, audible noise (AN) and radio interference (RI) produced by a High Voltage DC line are maximum during fair weather and are lower during foul weather. Radio interference (RI) has no established regulatory limit in the U.S., but the FCC mandates that transmission lines may not interfere with other communication systems operating under FCC rules.

Significance Criteria

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

There are two criteria for assessing noise impacts. First, noise levels generated by the Project must comply with the relevant federal, State, or local standards or regulations. Mitigation of noise impacts on worker safety and health is enforced by OSHA (by Cal-OSHA in California), but effectiveness depends on the vigilance of supervisors in seeing that workers use protective gear in high noise environments. Noise impacts on the surrounding communities are regulated through local noise ordinances supported by nuisance complaints and subsequent investigation. There are no regulatory significance criteria applicable to the Project during construction or operation, but it is assumed that existing regulations would be enforced.

The second measure of impact recognized by noise analysts is the increase in noise levels above the existing ambient level as a result of the introduction of a new source of noise. A change in noise level due to a new noise source can create an impact on people. The degree of impact is hard to assess because of the highly subjective character of individuals' reactions to changes in noise. Empirical studies have shown people begin to notice changes in environmental noise levels of around 5 dB(A) (EPA 1974). Thus, average changes in noise levels less than 5 dB(A) cannot be definitively considered as producing an adverse impact. For changes in noise levels above 5 dB(A), it is difficult to quantify the impact beyond the obvious: the greater the noise level change, the greater the impact. A judgment commonly used in community noise impact analyses associates long-term noise increases of 5 to 10 dB(A) with "some impact." Noise level increases of more than 10 dB(A) are generally considered severe. In the case of short-term noise increases, such as those from construction, the 10 dB(A) threshold between "some" and "severe" impact is often replaced with a criterion of 15 dB(A). These noise-averaged thresholds are to be lowered when the noise level fluctuates, or the noise has an irritating character with considerable high frequency energy, or if it is accompanied by subsonic vibration. In these cases, the impact must be individually estimated.

Impacts of the Proposed Action or Alternatives would be considered significant and require mitigation if they result in the following:

- Adopted local standards, noise elements, or ordinances would be exceeded in noise level, timing, or duration.
    - The County of Los Angeles has the only Construction Noise decibel limits of 60 dB(A) during daytime hours for residential areas. Exterior noise standards for stationary and point sources within residential areas are 45 dB(A) from 10:00 p.m. to 7:00 a.m. and 50 dB(A) from 7:00 a.m. to 10:00 p.m.
    - The City of Los Angeles has a noise ordinance that specifies a maximum noise level for residential land use of 40 dB(A) from 10:00 p.m. to 7:00 a.m. and 50 dB(A) from 7:00 a.m. to 10:00 p.m.
    - The City of Santa Clarita specifies a policy that in new single-family and multi-family residential neighborhoods, the ambient noise level shall not exceed 55 dB(A) (night) and 65 dB(A) (day).
    - The City of San Fernando specifies a minimum noise level for residential land use of 55 dB(A) from 7:00 a.m. to 10:00 p.m. and 50 dB(A) from 10:00 p.m. to 7:00 a.m.

- The Project would increase the ambient noise level above ordinance-specified limits for the land use zoning.

- An increase in noise levels of 15 dB(A) or more would occur over a period of at least one-half day at a sensitive receptor with any ambient noise level; permanent increases of 10 dB(A) would also be significant.
- Noise increments to the ambient that are as low as 5 dB(A) would be significant if they occur during quieter hours at night (between 10 p.m. and 7 a.m.).
- Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- For a project within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the Project area to excessive noise levels. For a project within the vicinity of a private airstrip, exposure of people residing or working in the Project area to excessive noise levels.

Standard Practices

The following standard practices are proposed to address noise impacts of the project on communities and designed to be applied only during construction. These practices are included in the description of the Project as General Practices GP-60, GP-61, and GP-62. LADWP would implement the following noise-suppression techniques, at a minimum, to avoid possible violations of local rules, standards, and ordinances during construction:

- On construction equipment, use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Install temporary sound walls or acoustic blankets around stationary noise sources (e.g., generators, pumps) to shield adjacent sensitive receptors. Where feasible, these sound walls or acoustic blankets shall have a height of no less than 8 feet, a Sound Transmission Class (STC) of 27 or greater, and a surface with a solid face from top to bottom without any openings or cutouts.
- Minimize unnecessary construction vehicle idling time (see also Mitigation Measure AIR-2D, Restrict diesel engine idling to 5 minutes). The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. A "common sense" approach to vehicle use shall be applied; if a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off. It should be noted that certain equipment, such as large diesel powered vehicles, require extended idling for warm-up and repetitive construction tasks and would therefore not be subject to being shut off when not in use.

Summary of Impact Analysis Results

No Action Alternative

Under the No Action Alternative, neither the Proposed Action (Alternative 2) nor one of its Alternatives (Alternatives 1, 2a and 3) would be implemented. However, in the absence of either the Proposed Action or one of its Alternatives, the purpose and need for power transmission capabilities would not be met.

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. The following general construction impacts are anticipated on all action Alternatives. The major differences between each Alternative are discussed later in this section.

General Construction Noise Impacts

Construction noise can be created from on-site and off-site sources. On-site noise sources would principally consist of the operation of heavy-duty diesel and gasoline-powered construction equipment. Off-site noise sources would include vehicles commuting to and from the job site, as well as from trucks transporting material to the staging areas or construction ROW. These sources are described below.

On-site Noise Sources

Two types of noise are associated with on-site construction activities: intermittent and continuous. Noise levels would vary for different construction tasks and type of equipment used (refer to Table 4.2.2-2). On-site construction noise would occur primarily from heavy-duty construction equipment, including helicopters. It is estimated that heavy-duty construction equipment such as dozers would be on-site for approximately six months, during which construction activities would involve installing foundations, assembling and installing the lattice structures, clipping in the conductor, and restoring the ROW. Helicopters would be used to string pilot lines for the new conductors. It should be noted that noise levels are calculated based on the assumption that noise from a localized point source is reduced by approximately 6 dB(A) with each doubling of distance from the source of noise.

The expected maximum intermittent construction noise levels would result from the use of helicopters to string the pilot lines for the conductors. Helicopter noise is typically in the range of 90 to 100 dB(A) for takeoff or approach operations and 80-90 dB(A) when hovering during transport and construction[2]. Helicopter operations are expected to occur in the daytime. Intermittent construction noise levels would range from 80 to 90 dB(A) at 50 feet for supporting structure assembly. Direct noise impacts would result from construction activities occurring adjacent to sensitive receptors, such as residential and recreation areas. However, this noise would be short-term, occurring mostly during daylight hours.

The installation of spherical markers on ground wires could result in minimal additional construction noise impacts. Some short-term impacts from the additional use of lifts or helicopters could occur, but due to the limited nature of these impacts, they are not expected to cause any noise significance thresholds to be exceeded or to change the impact assessment for noise.

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[2] Federal Aviation Administration, Noise Levels for U.S. Certificated and Foreign Aircraft, November 15, 2001.

Off-site Noise Sources

Off-site noise during construction would occur primarily from commuting workers and from various truck trips to and from the construction sites. The procedures for bringing personnel, materials, and equipment to each structure site would vary along the route alignment. However, it is anticipated that most workers would be meeting at one of the staging areas and would travel to the construction site in commuter vans or buses. It is also assumed that truck trips would be required to haul structures, conductor line, and other materials to the construction sites. The peak noise levels (approximately 70 to 75 dB(A) at 50 feet) associated with passing trucks and commuting worker vehicles would be short-term in duration, and would generate adverse but less than significant impacts.

New 230 kV Circuit

Construction Noise

The addition of a new circuit on existing towers would require surveying of ROW, rehabilitation of existing access and spur roads, and clearing of ROW. The construction activities would not include installation of new structures, but would involve reinforcement of structures, foundations, and the addition of new conductor. Construction noise levels for these construction activities would range from approximately 67 to 86 dB(A) at a distance of 50 feet from the source. Pilot lines would be pulled (strung) from tower to tower by helicopter with an anticipated noise level of 90 to 100 dB(A). The construction noise sources would be short-term and would occur in the daytime hours.

Construction noise from the addition of a new 230 kV circuit would impact the following: 20 residences that are within 1,000 feet of the new 230 kV circuit, Castaic Lake State Recreation Area, and camping areas within the ANF.

Operational Noise

Configuration D for the new 230 kV circuit is in the Castaic area along Paradise Road and comprises two existing LADWP 230 kV transmission lines. Two tower structures are within Configuration D—the southern lattice 230 kV BRRTP double-circuit line with both positions occupied, and the northern lattice double-circuit structures for the existing LADWP 230 kV transmission lines that have a vacant position. The new 230 kV circuit would be added to the northern double-circuit towers. The ROW width for the 230 kV line was assumed to be 200 feet (100 feet from center to edge of ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} foul weather noise level of 44 dB(A) at the edge of the ROW, 100 feet from the centerline.
- RI L_{50} fair weather noise level of 41 dB at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 16 dB at the edge of the ROW, 100 feet from the centerline.

The Castaic – Haskell corridor is in Los Angeles County and the minimum exterior noise level for Los Angeles County is 45 dB(A). There are 20 residences within 1,000 feet of the ROW of the Castaic-Haskell corridor; however, the 44 dB(A) maximum calculated audible noise level for Configuration D (foul weather conditions) is below the county noise ordinance limit.

The maximum audible noise level (foul weather) at the edge of the ROW would be below the "normally acceptable" in exterior noise environments of up to 60 CNEL for single-family homes, according to the California "Land Use Compatibility for Community Noise Environments" guidelines.

The Castaic Dam Heliport in the unincorporated community of Castaic is close to the transmission line corridor, but is not in sensitive noise receptor areas.

Interstate Highway 5 is close to the Castaic – Haskell corridor and would produce higher ambient noise than the transmission line. There is one residential subdivision on the east side of the transmission line corridor away from Interstate Highway 5.

The maximum RI level for Configuration D would be 41 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration D would be 16 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

Reconductoring

Construction Noise

The construction activities for the upgrade of the existing BR-RIN would require surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, removal of the existing conductor, conductor installation, and cleanup. Some of the towers would need to be modified, replaced, and/or foundations reinforced or replaced to carry the additional weight of the new heavier conductor. The removal of the existing conductor would be used to string a pulling line, and this line would then be used to pull in the new conductor. Construction noise levels for these construction activities would range from approximately 67 to 86 dB(A) at a distance of 50 feet from the source. For conductor stringing activities, the helicopter noise levels would range from 90-100 dB(A). The construction noise sources would be short-term and would occur in the daytime hours.

Sensitive receptors that would be impacted by the construction noise include residences, the Pacific Crest Trail, and the Antelope Valley California Poppy Reserve. The alignment from the Barren Ridge Switching Station to the proposed Haskell Switching Station would be the same for the reconductoring component of the Project and construction of a new 230 kV transmission line. Within 1,000 feet from the existing transmission line are 110 residences from Barren Ridge

Switching Station to the proposed Haskell Canyon Switching Station and 1,980 residences from the Haskell Switching Station to the Rinaldi Substation (total of 3,090 residences).

Operational Noise

Configuration K is in the City of Santa Clarita and comprises the following lines: four-circuit 230 kV line, which includes the reconductored 230 kV line, one LADWP 115 kV transmission line, and LADWP 500 kV PDCI single-circuit line. The transmission structures for Configuration K are: the lattice 230 kV four-circuit structure; the lattice 500 kV PDCI single-circuit structure; and the lattice structure for the 115 kV LADWP double-circuit line.

The maximum calculated noise levels adjacent to the four-circuit 230 kV line would be as follows:

- AN L_{50} foul weather noise level of 39 db(A) at the edge of the ROW, 100 feet from the centerline.
- RI L_{50} fair weather noise level of 45 dBμV/m at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 17 dBμV/m at the edge of the ROW, 100 feet from the centerline.

The maximum audible noise level from Configuration K would be 39 db(A) (foul weather conditions). This is the side of the ROW from the four-circuit transmission line towards the 500 kV PDCI line. The 500 kV PDCI transmission line contributes the highest noise levels within the corridor compared to the 230 and 115 kV transmission lines, and the use of larger conductors would not increase the existing noise levels.

The City of Los Angeles has a noise ordinance that specifies a minimum noise level for residential land use of 50 db(A) from 7:00 a.m. to 10:00 p.m. and 40 db(A) from 10:00 p.m. to 7:00 a.m. The maximum calculated noise level (39 db(A)) would be lower than the most stringent noise ordinance of 40 db(A).

The maximum audible noise level (foul weather) at the edge of the ROW would be below "normally acceptable" in exterior noise environments up to 60 CNEL (Community Noise Equivalent Level) for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines.

Nine of the eleven airports for the reconductored corridor that would be close to the transmission line corridor are in sensitive noise receptor areas. The noise levels from airports and heliports would exceed the transmission line noise.

Reconductoring would also come close to State Routes 14, 58, and 138, and Interstate Highways 5 and 210. The freeways would produce higher ambient noise levels than that of the transmission line.

The maximum RI level for Configuration K would be 45 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration K would be 17 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels and cause objectionable television quality (based on a Signal-to-Noise Ratio [SNR] guideline of 30 as discussed in Chapter 3).

Haskell Canyon Switching Station

Construction Noise

Construction of the new Haskell Canyon Switching Station would consist of preconstruction surveys, clearing and grading of access roads, site grading and drainage development, installation of concrete foundations and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors, and installation of control and relay houses. Equipment required for station construction would include graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks would also be required. Construction would require an estimated 12 months with approximately 60 workers. The construction noise sources would be short-term and would occur in the daytime hours.

Following site grading and development, reinforced concrete foundations would be installed to support the steel structures and electrical equipment and control facilities. It is estimated that 1,500 cubic yards of concrete would need to be delivered to the switching station site for the foundations. Foundation work would require approximately 180 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 120-day working period. Subsequent to the foundation installation, trenches would be dug to facilitate placement of copper conductors for the station grounding mat.

Sensitive receptors that would be impacted from construction noise of the Haskell Canyon Switching Station are the residences approximately 0.4 mile south of the switching station and the Veluzat Motion Picture Ranch. The motion picture ranch has existing buildings west of Pettinger Canyon Road, which would be approximately 0.4 mile from the switching station.

The maximum estimated construction equipment noise at the location of these sensitive receptors (as shown in Table 4.2.2-1) would be approximately 70 dB(A), which exceeds Los Angeles County's construction noise ordinance (60 dB(A)). It is recommended that all construction equipment use noise reduction features that are no less effective than those originally installed by the manufacturer. Although the construction noise would exceed noise ordinances, the construction noise sources would be short-term and would occur in the daytime hours, and therefore impacts are considered less than significant.

Operational Noise
Sources of audible noise within a substation include equipment such as transformers, reactors, voltage regulators, circuit breakers and other intermittent noise generators. Among these sources, transformers and reactors have the greatest potential for producing noise. Reactors are similar to transformers in terms of audible noise. Switching stations do not have transformers because there is no transformation of the line voltages. The broadband sound from fans, pumps and coolers has the same character as ambient sound and tends to blend with the ambient noise. In the switching stations, the electrical equipment (as identified above) can be classified as point noise sources. For point sources, a 6 dBA reduction in noise occurs with each doubling of the distance between the source and the point of measurement. This is equivalent to a decrease of 20 dB(A) for each increase in distance from the source by a factor of ten. The operational noise from the switching station would not be audible to sensitive receptors because of the distance (0.4 mile).

Barren Ridge Switching Station

Construction Noise
Expansion of the existing Barren Ridge switching station would consist of preconstruction surveys, site preparation and grading, installation of reinforced concrete foundations, installation of electrical conduits for equipment power and control, and installation of structures and equipment. Necessary pre-construction geotechnical on-site investigation would include two test pits excavated by a backhoe to investigate soil density and settlement, and cone penetration test locations on-site to determine friction resistance for piers. The cone penetration test rig would be a small truck with a hydraulic ram assembly mounted on the back, which is used to push the cone into the ground to a depth up to 50 feet. Existing roads would be used to access the site.

There are no sensitive receptors close to the Barren Ridge Switching Station that would be impacted by construction noise. The closest residential area to the switching station is Rancho Seco and it is approximately 3.5 miles to the northeast.

Operational Noise
Refer to the discussion of operational noise for the Haskell Canyon Switching Station above. The expanded Barren Ridge Switching Station would have similar operational noise.

New 230 kV Double-Circuit Transmission Line

A detailed discussion regarding the differences between the action Alternatives is included below. The main difference between the action Alternatives is the location of the new 230 kV double-circuit transmission line and the major types of mitigation applied, such as helicopter and three-circuit tower mitigation.

Alternative 1
The Alternative 1 transmission line would have the longest route and would extend a distance of 83 miles from the Barren Ridge Switching Station to the proposed switching station in Haskell Canyon. This Alternative's transmission line would also require the most miles (8.5 miles) of helicopter-constructed towers and new access roads (7.3 miles of transmission line). However, it has the second least number of residences (106) within 1,000 feet of the proposed centerline.

Construction Noise

The new 230 kV double-circuit transmission line for Alternative 1 would involve surveying, constructing access roads; clearing ROW and tower sites; installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie-in; and cleanup and site reclamation. Construction noise levels for these construction activities would range from approximately 65 to 95 dB(A) at a distance of 50 feet from the source. The conductor stringing activities would have a noise level of 90-100 dB(A) at 50 feet and 80-90 dB(A) when helicopters are hovering at 150 feet. The construction noise sources would be short-term and occur in the daytime hours.

Within the Angeles National Forest, eight and a half miles of the new transmission line would be constructed utilizing helicopter mitigation. The use of helicopters for the construction of towers would eliminate the need for new access roads and minimize the use of heavy equipment. However, construction of the helicopter staging areas and increased use of the helicopters during construction would increase the noise levels for a longer duration than that of conventional ground construction of transmission line towers.

Potential sensitive receptors that may be impacted by the construction of the Alternative 1 transmission line are the 106 residences within 1,000 feet of the transmission line, the Pacific Crest Trail, Neenach Elementary School, and the Veluzat Motion Picture Ranch. Residential areas close to the helicopter staging areas and along flight paths would be also be sensitive noise receptors.

Operational Noise

To calculate noise impacts along the Alternative 1 transmission line, three locations were identified—Configurations A, B, and C.

Configuration A. The transmission structures for Configuration A are: the lattice 230 kV BRRTP transmission line double-circuit structure; the lattice 500 kV PDCI single-circuit structure; and the BR-RIN lattice 230 kV transmission line single-circuit structure. One of the proposed ROW widths for the 230 kV transmission line corridor is 200 feet with the distances to the edge of the ROW, 115 feet (towards the outside of the corridor) and 85 feet (towards the existing lines inside of the corridor).

The maximum calculated noise levels would be as follows:

- AN L_{50} foul weather noise level of 42 dB(A) at the edge of the ROW, 85 feet from the centerline.
- RI L_{50} fair weather noise level of 58 dBμV/m at the edge of the ROW, 85 feet from the centerline.
- TVI L_{50} foul weather noise level of 10 dBμV/m at the edge of the ROW, 85 feet from the centerline.

There are no standards or noise ordinances to compare with audible noise levels for transmission lines. In the U.S., the EPA has published guidelines relating to audible noise in general. The

EPA guidelines recommend that the Day-Night Average Sound Level (L_{dn}) be limited to 55 dB(A) outdoors and 45 dB(A) indoors. This applies to all Alternatives.

The power lines would not produce ground-borne vibration or noise except during construction activities, which would be temporary and performed during daytime hours. This applies to all Alternatives.

The maximum audible noise level at the edge of the ROW for Configuration A is 42 dB(A), which is calculated in foul weather conditions. This does not represent a substantial increase in the existing noise levels (10 dB(A) or more as a permanent increase or 5 dB(A) or more in quiet hours).

The maximum audible noise level (foul weather) at the edge of the ROW would be below "normally acceptable" in exterior noise environments up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines.

Configuration A is in Kern County and the county does not have a specific noise ordinance.

Two of the four airports (Mojave and Lloyd's Landing) for this Alternative would be close to the transmission line corridor, but are not in sensitive noise receptor areas.

State Highway 58 would cross the corridor and produce higher ambient noise than the transmission line, but this would not be close to sensitive noise receptors. State Highway 14 would parallel the corridor but would not be close to the transmission line corridor to produce higher ambient noise levels, nor are there any sensitive noise receptors.

The maximum RI level would be 58 dBμV/m at the edge of the ROW. The maximum RI level without the BRRTP 230 kV double-circuit line is 59 dBμV/m, which is primarily from the 500 kV PDCI line. The proposed BRRTP 230 kV double-circuit transmission line would not contribute appreciably to the RI noise levels. If the pre-existing corridor is required to be evaluated, absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration A would be 16 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels or cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

Configuration B. Configuration B comprises the 230 kV BRRTP double-circuit line and a distribution line. The distribution line is assumed to be 12 kV and has two circuits. The distribution circuits are assumed to have 4/0 AWG ACSR conductor with an ampacity rating of 366 Amps[3]. The location is in the Holiday Estates area.

Configuration B structures include a lattice 230 kV double-circuit structure and a wood pole structure for the two distribution circuits. The ROW width for the 230 kV transmission line was assumed to be 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} foul weather noise level of 38 dB(A) at the edge of the ROW, 100 feet from the centerline.
- RI L_{50} fair weather noise level of 27 dB at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 7 dB at the edge of the ROW, 100 feet from the centerline.

There are no standards or noise ordinances to compare with audible noise levels for transmission lines. In the U.S., the EPA has published guidelines relating to audible noise in general. The EPA guidelines recommend that the Day-Night Average Sound Level (L_{dn}) be limited to 55 dB(A) outdoors and 45 dB(A) indoors. This applies to all Alternatives and the reconductor corridor.

The maximum audible noise level was 38 dB(A) (foul weather conditions)—the lowest calculated noise level of all the configurations. This configuration had the lowest noise levels because there are no existing high voltage transmission lines in the northern portion of Alternative 1.

Configuration B is in Los Angeles County with a maximum calculated audible noise level of 44 dB(A) at the edge of the ROW (100 feet from the centerline). There are a couple of residential subdivisions adjacent to the ROW in the corridor of the Alternative 1 transmission line, but the noise levels at the edge of the transmission line ROW would be less than the Los Angeles County noise ordinance.

The maximum audible noise level (foul weather) at the edge of the ROW would meet the "normally acceptable" level in exterior noise environments of up to 60 CNEL for single-family homes, established in California's "Land Use Compatibility for Community Noise Environments" guidelines.

Airports and two heliports are close to the transmission line corridor for Alternative 1, and the Alternative 2 transmission line would not create significant ambient noise in sensitive noise receptor areas. This also applies to Configuration C in the Castaic area.

Interstate Highway 5 would be close to the central portion of the Alternative 1 transmission line and would produce higher ambient noise than the transmission line. There is one residential subdivision on the east side of the transmission line corridor away from I-5. Lancaster Road

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[3] Southwire. 2007. *Overhead Conductor Manual*. 2nd Edition.

(State Highway 138) would parallel a portion of the Alternative's transmission line. There is one residential/commercial subdivision on the north side of the corridor away from Lancaster Road.

The maximum RI level for Configuration B would be 27 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. The maximum RI level would be lower than the guideline.

The maximum TVI level for Configuration B would be 7 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels or cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

Configuration C. Configuration C comprises the 230 kV BRRTP double-circuit transmission line and three existing SCE 230 kV single-circuit transmission lines. The location is in the area of Paradise Ranch Road.

Configuration C structures include a lattice 230 kV double-circuit structure and three lattice single-circuit structures. The ROW width for the 230 kV line was assumed to be 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} foul weather noise level of 46 dB(A) at the edge of the ROW, 100 feet from the centerline.
- RI L_{50} fair weather noise level of 48 dB at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 23 dB at the edge of the ROW, 100 feet from the centerline.

The maximum audible noise level is 46 dB(A) (foul weather conditions). SCE's existing high voltage transmission lines contribute most of the audible noise, not LADWP's proposed BRRTP.

Configuration C is in Los Angeles County with a maximum calculated audible noise level of 44 dB(A) at the edge of the ROW (100 feet from the centerline). There are a few residential subdivisions adjacent to the ROW in the Alternative 1 transmission line corridor, but the noise levels at the edge of the transmission line ROW would be less than the Los Angeles County noise ordinance of 45 dB(A). The maximum audible noise level (foul weather) at the edge of the ROW would meet the "normally acceptable" standard in exterior noise environments up to 60 CNEL for single-family homes, established in California's "Land Use Compatibility for Community Noise Environments" guidelines.

Interstate Highway 5 would be close to the central portion of the Alternative 1 transmission line and would produce higher ambient noise than the transmission line. Paradise Ranch Road is adjacent to a residential development and would cause higher ambient noise than the transmission lines, particularly certain times during the day.

The maximum RI level for Configuration C would be 48 dBµV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBµV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBµV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration C would be 23 dBµV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

CEQA Significance
Construction noise would exceed noise ordinances; however, construction activities would be temporary and of short duration. Therefore, noise impacts for Alternative 1 are considered less than significant.

Alternative 2
Alternative 2 is LADWP's Proposed Action and has the shortest transmission line of the action Alternatives, at 61 miles. Within the unincorporated communities of Elizabeth Lake and Green Valley, LADWP plans to utilize three-circuit towers that would replace the existing BR-RIN 230 kV transmission line and carry the two proposed Barren Ridge to Haskell Canyon circuits. To maintain electrical service along the existing BR-RIN transmission line, a temporary 7.5 mile long 230 kV transmission line would first be constructed mainly along San Francisquito Road. Then the existing BR-RIN transmission line would be removed, and new three-circuit towers constructed.

While specific helicopter construction locations have not been identified for this Alternative, after final design, in areas of steep terrain and limited access within the ANF, the USFS may require construction of the new 230 kV double-circuit transmission structures by use of helicopters.

Construction Noise
The new 230 kV double-circuit transmission line for Alternative 2 would involve surveying, constructing access roads; clearing ROW and tower sites; installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie-in; and cleanup and site reclamation. Construction noise levels for these construction activities would range from 65 to 95 dB(A) at a distance of 50 feet from the source. For conductor stringing activities the helicopter noise levels would range from 90-100 dB(A). The construction noise sources are short term and would occur in the day time hours.

Within the communities of Elizabeth Lake and Green Valley, construction of the temporary line would require surveying; clearing of ROW and temporary pole sites; installation of poles; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; and cleanup and site reclamation. A majority of the poles would be direct-embedded and set in place to avoid permanent tower foundations. Noise impacts from the construction of the temporary line, removal of the existing BR-RIN, and construction of the three-circuit towers would be very similar to that of the double-circuit towers, however the duration for all those steps would take longer than the construction of a double-circuit transmission line.

Sensitive receptors that would be impacted by the construction of Alternative 2 transmission line are 110 residences within 1,000 feet of the transmission line, the Pacific Crest Trail, and the Antelope Valley California Poppy Reserve.

Operational Noise

Three locations were identified along Alternative 2 and 2a to conduct noise studies—Configurations A, E, and F. The noise impacts for Configuration A are discussed under Alternative 1.

Configuration E. Configuration E was conducted for the Alternatives 2, 2a, and 3 transmission lines. It contains the BRRTP 230 kV line, an SCE 220 kV line, the BR-RIN 230 kV line, and the 500 kV PDCI line. This configuration is in the Antelope Valley region. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- SCE 220 kV single-circuit line
- LADWP 230 kV BR-RIN single-circuit line
- LADWP 500 kV PDCI single-circuit line

The transmission structures for Configuration E are: the BRRTP double-circuit lattice 230 kV structure, a steel monopole SCE single-circuit structure, the lattice single-circuit LADWP 230 kV structure, and the lattice 500 kV PDCI single-circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 41 dB(A) at the edge of the ROW 100 feet from the centerline.
- RI L_{50} fair weather noise level of 37 dBμV/m at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 9 dBμV/m at the edge of the, 100 feet from the centerline.

The maximum audible noise level for Configuration E would be 41 db(A (calculated for fair weather conditions). The 500 kV PDCI contributes most of the noise to this configuration. The addition of a double-circuit 230 kV transmission line would not increase the existing noise levels. Configuration E is in Los Angeles County and the expected noise level meets the County exterior noise ordinance standard of 45 dB(A).

The maximum audible noise level (foul weather) at the edge of the ROW would meet the "normally acceptable" standard in exterior noise environments of up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines.

Two of the four airports (Mojave and Lloyd's Landing) for these Alternatives would be close to the transmission line corridor, but are not in sensitive noise receptor areas. This also applies to Configuration F.

The maximum RI level for Configuration E would be 37 dBμV/m at the edge of the ROW. In the absence of signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. The maximum RI level would be lower than the guideline.

The maximum TVI level for Configurations E would be 9 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

Configuration F. Configuration F is in the unincorporated community of Green Valley and comprises the three-circuit structure and the LADWP DC line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- LADWP 230 kV BR-RIN single-circuit line
- LADWP 500 kV PDCI single-circuit line

The transmission structures for Configuration F are: the lattice 230 kV, three-circuit structure (BRRTP double-circuit and the BR-RIN 230 kV circuit), and the lattice 500 kV PDCI single-circuit structure. The ROW width for the 230 kV three-circuit structure was assumed to be 125 feet (62.5 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 41 dB(A) at the edge of the ROW toward the 500 kV LADWP PDCI line, 100 feet from the centerline.
- RI L_{50} fair weather noise level of 54 dBμV/m at the edge of the ROW of the 500 kV LADWP PDCI line, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 14 dBμV/m at the edge of the ROW of the 500 kV LADWP PDCI line, 100 feet from the centerline.

The maximum audible noise level from Configuration F would be 41 dB(A), which is calculated for fair weather conditions. Similar to Configuration E, the 500 kV PDCI contributes most of the noise to Configuration F, and implementation of the BRRTP would not increase the existing operational noise levels. The maximum calculated audible noise level of 41 dB(A) at the edge of the ROW 100 feet from the centerline meets the Los Angeles County exterior noise ordinance standard.

The maximum audible noise level (foul weather) at the edge of the ROW meets the "normally acceptable" standard in exterior noise environments of up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines.

Two of the four airports (Mojave and Lloyd's Landing) for these Alternatives would be close to the transmission line corridor, but are not in sensitive noise receptor areas.

For the Alternative 2 transmission line, San Francisquito Canyon Road is adjacent to the unincorporated community of Green Valley and would produce higher ambient noise levels than the transmission lines.

The maximum RI level for Configuration F would be 54 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration F would be 14 dBμV/m at the edge of the ROW. This TVI level is low enough not to degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3).

CEQA Significance
Construction noise would exceed noise ordinances; however, construction activities would be temporary and of short duration. Therefore, noise impacts for Alternative 2 are considered less than significant.

Alternative 2a
The Alternative 2a transmission line would be 63 miles long from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station. It is very similar to the Alternative 2 transmission line (LADWP'S Proposed Action) and shares 56 miles of the same alignment; however, seven miles of the Alternative 2a transmission line would be re-routed around the unincorporated community of Green Valley. A new ROW outside of existing utility corridors would be created in the Angeles National Forest and require just under four miles of the transmission line to be constructed by helicopter.

The proposed Alternative 2a transmission line has 70 residences within 1,000 feet of the centerlines—the least residences of any of the action Alternatives.

Construction Noise
The construction for the Alternative 2a transmission line would be similar to the construction for the Alternative 2 transmission line, except for three and a half miles of the new transmission line (which would bypass the unincorporated community of Green Valley) that would be constructed

utilizing helicopter mitigation. Although construction impacts of a new transmission line would be avoided in Green Valley, residents may experience helicopter construction noise associated from the construction of the Alternative 2a transmission line. Noise levels for the construction of the helicopter staging areas are expected to range from 65 to 95 dB(A) and the expected helicopter noise levels for the tower assembly in the range of 90 to 100 dB(A) for takeoff or approach operations and 80 to 90 dB(A) when hovering during transport and construction. The increased use of the helicopters during construction would increase the noise levels for a longer duration than that of conventional ground construction of transmission line towers. Sensitive receptors to the helicopter construction would include the following areas within the ANF: Tule Inventoried Roadless Area, Developed Recreation Areas (Pacific Crest Trail), and Dispersed Recreation (hiking, hunting, etc.), and communities close to the helicopter staging area and flight paths.

Sensitive receptors to the construction of the Alternative 2a transmission line would be similar to Alternative 2. They include the Antelope Valley California Poppy Reserve, Pacific Crest Trail, dispersed recreation within the ANF, and 70 residences (40 more residences than Alternative 2).

Operational Noise

Operational noise would be very similar to Alternative 2, since they share 56 miles of the same proposed alignment. Along the re-route area around Green Valley (seven miles), there are no existing transmission lines along Alternative 2a and the noise levels would increase; however, there are no sensitive receptors along this Alternative. Therefore, impacts from noise are not anticipated.

CEQA Significance

Construction noise would exceed noise ordinances; however, construction activities would be temporary and of short duration. Therefore, noise impacts for Alternative 2a are considered less than significant.

Alternative 3

The Alternative 3 transmission line would extend a total of 76 miles from the Barren Ridge Switching Station to the proposed switching station in Haskell Canyon. This Alternative's transmission line has the most residents (242) within 1,000 feet of the centerline of any of the action Alternatives. Helicopter construction is not anticipated on this Alternative; however, after final design, if areas of steep terrain and limited access are identified within the ANF, the USFS may require construction of the new 230 kV double-circuit transmission structures by use of helicopters.

Construction Noise

The new 230 kV double-circuit transmission line for Alternative 3 would involve surveying, constructing access roads; clearing ROW and tower sites; installing foundations; assembling and installing the towers; clearing, pulling, tensioning, and splicing sites; installing ground wires and conductors; installing counterpoise; switching station tie-in; and cleanup and site reclamation.

Construction noise levels for these construction activities would range from approximately 65 to 95 dB(A) at a distance of 50 feet from the source. The construction noise sources would be short-term and would occur in the daytime hours. There is a possibility of helicopter construction in steep terrain in this corridor in the ANF.

Potential sensitive receptors are the Pacific Crest Trail, three movie studios, Ritter Ranch Park, dispersed recreational areas within the ANF, and 242 residences within 1,000 feet of the transmission line.

Operational Noise

Configuration G for Alternative 3 comprises the BRRTP line, three SCE 500 kV lines, one SCE 69 kV line, and one SCE 220 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- SCE 500 kV single-circuit line
- SCE 500 kV single-circuit line
- SCE 69 kV double-circuit line
- SCE 220 kV single-circuit line
- SCE 500 kV single-circuit line

The transmission structures for Configuration G are: the BRRTP double-circuit lattice 230 kV structure, three lattice 500 kV single-circuit structures, a steel monopole 69 kV double-circuit structure, and a steel monopole 220 kV single-circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 61 dB(A) at the edge of the ROW 100 feet from the centerline.
- RI L_{50} fair weather noise level of 53 dBμV/m at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 32 dBμV/m at the edge of the ROW, 100 feet from the centerline.

The maximum audible noise level for Configuration G would be 61 db(A) (calculated for fair weather conditions). SCE's high voltage transmission lines contribute the greatest amount of noise for this configuration, and the addition of a new double-circuit 230 kV transmission line would not increase the existing noise levels. Configuration G is in Los Angeles County, and the calculated noise level is higher than the County exterior noise ordinance (45 dB(A)). However, there are no sensitive receptors, such as residences, close to this corridor.

The maximum audible noise level (foul weather) at the edge of the ROW exceeds the "normally acceptable" standard in exterior noise environments of up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines. The section of the transmission line for Configuration G would not be close to residential homes. In addition, the significant contribution of the noise levels is from a pre-existing condition.

Bohunk's Airpark Airport is close to the transmission line corridor and would contribute greater noise levels than those of the transmission line.

The maximum RI level for Configuration G would be 53 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration G would be 32 dBμV/m at the edge of the ROW. This TVI level is high enough to possibly degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3). There are no residences in this section of the corridor.

Configuration H. Configuration H comprises the BRRTP line, three SCE 500 kV lines, three SCE 66 kV lines, and one SCE 220 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- SCE 66 kV double-circuit line
- SCE 500 kV single-circuit line
- SCE 500 kV single-circuit line
- SCE 500 kV single-circuit line
- SCE 66 kV double-circuit line
- SCE 66 kV double-circuit line
- SCE 220 kV single-circuit line

The transmission structures for Configuration H are: the BRRTP double-circuit lattice 230 kV structure, three lattice 500 kV single-circuit structures, three steel monopole 66 kV double-circuit structures, and a steel monopole 220 kV single-circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 63 dB(A) at the edge of the ROW 100 feet from the centerline.
- RI L_{50} fair weather noise level of 57 dBμV/m at the edge of the ROW, 100 feet from the centerline.

- TVI L_{50} foul weather noise level of 36 dBμV/m at the edge of the ROW, 100 feet from the centerline.

Configuration H had the highest calculated maximum audible noise level of 63 db(A) (calculated for fair weather conditions) compared to the other configurations used in the noise analysis. The existing SCE transmission lines contribute a significant amount to noise levels, and the addition of a new 230 kV transmission line would not increase existing noise levels. Configuration H is in Los Angeles County and the maximum calculated audible noise level would be 63 dB(A) at the edge of the ROW 100 feet from the centerline is higher than the Los Angeles County exterior noise ordinance or 45 dB(A), but there are no residences close to this corridor.

Bohunk's Airpark Airport is close to the transmission line corridor, and airport noise levels would exceed those of the transmission line.

The maximum audible noise level (foul weather) at the edge of the ROW would exceed the "normally acceptable" level in exterior noise environments of up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines. The section of the transmission line for Configuration H would not be close to residential homes. In addition, the significant component of noise levels is from a pre-existing condition.

The maximum RI level for Configuration H would be 57 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration H would be 36 dBμV/m at the edge of the ROW. This TVI level is high enough to possibly degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3). There are no residences, however, in this section of the corridor.

Configuration I. Configuration I comprises the BRRTP line, three SCE 500 kV lines, one SCE 66 kV lines, and one SCE 220 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- SCE 500 kV single-circuit line
- SCE 500 kV single-circuit line
- SCE 500 kV single-circuit line
- SCE 66 kV double-circuit line
- SCE 220 kV single-circuit line

The transmission structures for Configuration I are: the BRRTP double-circuit lattice 230 kV structure, three lattice 500 kV single-circuit structures, one lattice 66 kV double-circuit structure, and a steel monopole 220 kV single-circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 61 dB(A) at the edge of the ROW 100 feet from the centerline.
- RI L_{50} fair weather noise level of 54 dBµV/m at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 32 dBµV/m at the edge of the ROW, 100 feet from the centerline.

The maximum audible noise level for Configuration I would be 61 db(A) (calculated for fair weather conditions). Similar to Configuration H, the existing SCE transmission lines contribute a significant amount to the noise levels, and the addition of a new 230 kV transmission line would not increase the existing noise levels. Configuration I is in Los Angeles County and exhibits higher noise levels than the Los Angeles County exterior noise ordinance of 45 dB(A), and there are a few residences close to this corridor.

Bohunk's Airpark Airport is close to the transmission line corridor, and the airport noise levels would exceed those of the transmission line.

The maximum audible noise level (foul weather) at the edge of the ROW would be above "normally acceptable" in exterior noise environments up to 60 CNEL for single-family homes, according to the California "Land Use Compatibility for Community Noise Environments" guidelines. The section of the transmission line for Configuration I would not be close to residential homes. In addition, the significant contribution of the noise levels is from a pre-existing condition.

The maximum RI level for Configuration I would be 54 dBµV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBµV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBµV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration I would be 32 dBµV/m at the edge of the ROW. This TVI level is high enough to possibly degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3). But there are no residences in this section of the corridor.

Configuration J. Configuration J comprises the BRRTP line and two LADWP 500 kV lines. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV double-circuit line
- LADWP 500 kV single-circuit line
- LADWP 500 kV Single-circuit line

The transmission structures for Configuration J are: the BRRTP double-circuit lattice 230 kV structure, and two three-lattice 500 kV single-circuit structures. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The maximum calculated noise levels would be as follows:

- AN L_{50} fair weather noise level of 59 dB(A) at the edge of the ROW 100 feet from the centerline.
- RI L_{50} fair weather noise level of 53 dBμV/m at the edge of the ROW, 100 feet from the centerline.
- TVI L_{50} foul weather noise level of 31 dBμV/m at the edge of the ROW, 100 feet from the centerline.

The maximum audible noise level for Configuration J would be 59 db(A (calculated for fair weather conditions) and a significant contribution to the noise is from the two existing LADWP 500 kV transmission lines. Configuration J exceeds the Los Angeles County exterior noise ordinance standard of 45 dB(A) and there are a few residences close to this corridor; however, existing noise levels already exceed the noise ordinance, and addition of a new 230 kV transmission line would not increase the existing noise levels

The Agua Dulce Airport is close to the transmission line corridor, and airport noise levels would exceed those of the transmission line.

The maximum audible noise level (foul weather) at the edge of the ROW meets the "normally acceptable" standard in exterior noise environments of up to 60 CNEL for single-family homes, according to California's "Land Use Compatibility for Community Noise Environments" guidelines.

The Sierra Highway parallels and crosses this section of the proposed Alternative 3 transmission line corridor.

The maximum RI level for Configuration J would be 53 dBμV/m at the edge of the ROW. Absent signal strength data for broadcasted radio signals in the area, RI levels calculated for the edge of the ROW would need to be compared against the 38 dBμV/m design guideline. Signal strengths would vary throughout the protected coverage area and for each given station; therefore, a complete analysis of specific effects for all stations can only be completed with measured signal strengths in the area of the transmission line. The 38 dBμV/m design guideline provides reasonable guidance of expected effects in the area. Most of the AM broadcast stations are in the southern area of Los Angeles County.

The maximum TVI level for Configuration J would be 31 dBμV/m at the edge of the ROW. This TVI level is high enough to possibly degrade the TV signal levels and cause objectionable television quality (based on an SNR guideline of 30 as discussed in Chapter 3). There are a few residences in this section of the corridor. Television interference can be reduced by modification of an antenna.

CEQA Significance

Construction of Alternative 3 and the operational noise for the southern portion of the Alternative (Configurations G, H, I and J) would exceed noise ordinances. However, the construction activities would be temporary and of short duration, and the existing noise levels of the southern portion already exceed noise ordinances. Therefore, noise impacts for Alternative 3 are considered less than significant.

Summary and Comparison of Alternatives

Table 4.2.2-3 provides a summary comparison of impacts related to noise by Alternative.

TABLE 4.2.2-3. SUMMARY COMPARISON OF IMPACTS—NEW DOUBLE-CIRCUIT 230 KV TRANSMISSION LINE ALTERNATIVES: NOISE

Project Exposure	No Action Alternative	Alternative 1	Alternative 2 (Proposed Action)	Alternative 2a	Alternative 3
Maximum Audible Noise Levels from Operation of Transmission Line (dB(A))	Same as baseline.	Configuration A -- 42 Configuration B -- 38 Configuration C -- 46 Configuration D -- 44 Configuration K -- 39	Configuration A – 42 Configuration D -- 44 Configuration E -- 41 Configuration F-- 41 Configuration K -- 39	Configuration A -- 42 Configuration D -- 44 Configuration E -- 41 Configuration F -- 41 Configuration K -- 39	Configuration A -- 42 Configuration D -- 44 Configuration E -- 41 Configuration G -- 61 Configuration H -- 63 Configuration I -- 61 Configuration J -- 61 Configuration K -- 39
Radio Noise (dBμV/m)	Same as baseline.	Configuration A -- 58 Configuration B -- 27 Configuration C -- 48 Configuration D -- 41 Configuration K -- 45	Configuration A – 58 Configuration D -- 41 Configuration E -- 37 Configuration F-- 54 Configuration K -- 45	Configuration A – 58 Configuration D -- 41 Configuration E -- 37 Configuration F-- 54 Configuration K -- 45	Configuration A -- 58 Configuration D -- 41 Configuration E -- 37 Configuration G -- 53 Configuration H -- 57 Configuration I -- 54 Configuration J -- 53 Configuration K -- 45
Television Interference Noise (dBμV/m)	Same as baseline.	Configuration A -- 10 Configuration B -- 7 Configuration C -- 23 Configuration D -- 16 Configuration K -- 17	Configuration A – 10 Configuration D -- 16 Configuration E -- 9 Configuration F-- 14 Configuration K – 17	Configuration A – 10 Configuration D -- 16 Configuration E -- 9 Configuration F-- 14 Configuration K -- 17	Configuration A – 10 Configuration D -- 16 Configuration E -- 9 Configuration G -- 32 Configuration H -- 36 Configuration I -- 32 Configuration J -- 31 Configuration K -- 17
Miles of Helicopter Construction per Miles of Transmission Line	None	8.4	0*	3.6	0*
Miles of Transmission Line Requiring New Access Roads	None	7.3	0.1	0.1	0.6

Project Exposure	No Action Alternative	Alternative 1	Alternative 2 (Proposed Action)	Alternative 2a	Alternative 3
Residences Within 1,000 feet	none	106	156	70	242
Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Under the No Action Alternative, neither the Proposed Action nor an Alternative would not be implemented. Consequently, associated new noise impacts would not occur.	Construction-related noise would exceed the Los Angeles County noise ordinance, but construction would be temporary and would occur during daytime hours. Helicopter construction noise would be temporary and occur primarily in areas that do not have residences.	Construction-related noise would exceed the Los Angeles County noise ordinance, but construction would be temporary and would occur during daytime hours.	Construction-related noise would exceed the Los Angeles County noise ordinance, but construction would be temporary and would occur during daytime hours. Helicopter construction noise would be temporary and occur primarily in areas that do not have residences.	Construction-related noise would exceed the Los Angeles County noise ordinance, but construction would be temporary and would occur during daytime hours.
A substantial permanent increase in ambient noise levels in the vicinity of the Project above levels existing without the Project?	Same as above.	Alternative 1 would increase the ambient noise along northern portion (Configuration B), but would not be substantial.	Proposed Action operation would not generate permanent increase in ambient noise levels above existing conditions.	Same as Alternative 2.	Same as Alternative 2.
A substantial temporary or periodic increase in ambient noise levels in the vicinity of the Project above levels existing without the Project?	Same as above.	Same as Alternative 2.	The use of heavy machinery during construction of the Proposed Action would produce a temporary increase in noise levels.	Same as Alternative 2.	Same as Alternative 2.

*While specific helicopter construction locations have not been identified for this Alternative; after final design, in areas of steep terrain and limited access within the ANF, the USFS may require construction of the new 230 kV double-circuit transmission structures by use of helicopters.

4.2.3 LAND USE

Introduction

This section provides an overview of how land use impacts are defined, identified, and assessed. It presents the significance criteria on which impact determinations are based, recommends specific measures to mitigate adverse impacts anticipated from Project construction, operation, maintenance, and decommissioning relevant to land use, where warranted or feasible, and defines and lists the overall impacts identified for the Proposed Action and Alternatives. Refer to Section 4.2.4 (Agricultural Resources) and Section 4.2.5 (Recreation) for a discussion of impacts to agricultural and recreation resources.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to land use are addressed in this analysis:

- Acquisition of private property, eminent domain and the expansion of transmission line rights-of-way and easements
- Analysis of the effects of siting multiple high-voltage transmission lines within the same ROW
- Encroachment on Public lands for the addition of transmission lines
- Consistency with Southern California Association of Governments (SCAG) Regional Comprehensive Plan and Guide.

Impact Assessment Methodology

For purposes of this analysis, a construction-related (temporary) land use impact would occur if access to a land use would temporarily be disrupted or if the nature, condition, or operation of a land use would be temporarily altered during construction. The temporary land area requirements expected include the work areas around each structure site, work areas for installing conductors, guard structures at crossings, storage and staging areas, access roads, substation expansion, and new substation construction. Land temporarily disturbed during construction would be returned to as close to pre-construction conditions as possible following completion of construction activities.

An operational (permanent) land use impact would occur if access to a use would be permanently disrupted or if the nature, condition, or operation of a use would be permanently altered as a result of Project operation. Permanent land disturbance includes the structure sites, construction of new access and spur roads, and the removal of non-compatible land uses along the ROW for electric system maintenance, safety and reliability purposes.

Maintenance impacts refer to the effects resulting from the types of activities necessary for long-term maintenance of transmission lines and substations, such as routine inspections and repairs along the ROWs, operation of substations, and inspection and repair of permanent access roads.

The potential impacts associated with the Proposed Action and Alternatives are evaluated on a qualitative and quantitative basis through a comparison of the anticipated effects on land use. A change in the land use would normally be deemed significant if the effects described in the thresholds of significance would occur. The evaluation of impacts is based on professional judgment, previous environmental impact assessments, analysis of local agency land use resources polices, and the significance criteria established by Appendix G of the CEQA Guidelines.

Significance Criteria

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria have been identified and utilized to make these significance conclusions. Impacts of the Proposed Action or Alternatives would be considered significant and would require mitigation if they would:

- Criterion LU1: Conflict with any applicable federal, State, or local land use plans, goals, or policies.
- Criterion LU2: Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use.
- Criterion LU3: Conflict with military operations.

Significance conclusions for individual impacts are not required for NEPA compliance. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Mitigation Planning

Mitigation measures are designed to reduce impacts associated with the Proposed Action. Specific mitigation measures are recommended when it is determined that Project design and/or GPs would not fully mitigate an impact. The land use analysis concludes that implementation of the Proposed Action would not result in potentially significant impacts that would require specific mitigation. General Practice (GPs) measures are intended to minimize the potential for significant impacts associated with the Proposed Action and Alternatives and are listed in Chapter 2.

Summary of Impact Analysis Results

A detailed discussion of impacts and measures to reduce them for the Proposed Action and Alternatives are presented in this section. Table 4.2.3-1 summarizes impacts to land use identified within the Project area, based on the significance criteria discussed above.

TABLE 4.2.3-1. IMPACTS IDENTIFIED – LAND USE

Impact Number	Description
LU-1	Construction, operation or maintenance would conflict with relevant federal, State, or local land use plans, goals, or policies
LU-2	Construction activities would temporarily disrupt, displace, or preclude existing residential land uses
LU-3	Construction activities would temporarily disrupt, displace, or preclude existing non-residential land uses

Impact Number	Description
LU-4	Operation and maintenance would cause long-term disruption of existing and planned residential land uses
LU-5	Operation and maintenance would cause long-term disruption of existing and planned non-residential land uses
LU-6	Operation would conflict with military operations
LU-7	Construction, operation or maintenance of additional energy transport projects within Section 368 energy corridor.

No Action Alternative

Under the No Action Alternative, neither the Proposed Action nor an Alternative would be implemented. Consequently, associated land use impacts would not occur. However, in the absence of either the Proposed Action or one of its Alternatives, the purpose and need for power transmission capabilities would not be met.

Environmental conditions in the land use study area would be expected to change or evolve over time, regardless of whether the Proposed Action or an Alternative (including the No Action Alternative) is implemented. Therefore, the regional setting and baseline conditions (Chapter 3) would not remain static. Land use in the study area, as discussed below, would be expected to change under the No Action Alternative.

The cities of Santa Clarita, Palmdale and Lancaster are rapidly developing urban areas that include large tracts of planned residential development. Under the No Action Alternative, this region would be expected to continue its rapid rate of urban and suburban development. However, as all such development requires site-specific planning (e.g., the development of a Specific Plan, General Plan, or similar land use planning document) and environmental review before its implementation, it is assumed that potential land use impacts would be identified and mitigated, as feasible and appropriate.

The area south of the ANF comprises a mix of intensively developed urban uses with some open space/undeveloped areas. Under the No Action Alternative, the rate of development would be expected to either remain the same or expand into currently undeveloped areas. New development, particularly as related to residential uses and associated commercial and services and business uses, would be expected to occur in the vicinity of the cities of Santa Clarita, San Fernando and Los Angeles.

Under the No Action Alternative, existing transmission lines would continue to operate under their current conditions. Therefore, no new temporary or long-term impacts to existing and planned land uses within or adjacent to their respective ROWs would occur. However, under this Alternative there would be no corresponding net loss or preclusion of rural residential uses, or of open space/undeveloped area. Similarly, there would be no temporary land disturbances due to construction. Under this Alternative, the proposed Haskell Canyon Switching Station would not be constructed, nor the existing Barren Ridge Switching Station expanded.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

The addition of the future 230 kV circuit within the ROW would include only stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant. Impacts resulting from these future stringing activities would be nearly identical to those described for the reconductoring component of the Project in type, but less severe because the future circuit would involve only restringing activities.

The construction of the new 230 kV circuit would be consistent with applicable plans and policies.

The activities involved in the addition of a new 230 kV circuit within the ROW would consist of adding a second circuit to the existing 230 kV alignment. Therefore, the following would not occur:

- Division of an established community
- Disruption of established land uses

There would be a potential for temporary disruption to scattered residences and a church during the stringing of lines adjacent to these uses. These activities, however, would be short-term and temporary. Impacts to these land uses due to disruption would be considered adverse, but less than significant.

Operation of the future 230 kV circuit would have no impact, as the additional circuit would not change the use or boundaries of the existing ROW.

Reconductoring of BR-RIN Transmission Line

Construction access routes would traverse or run adjacent to a range of land use types, including residential, commercial, and industrial properties. Construction activities would have the potential to disrupt these land uses along the transmission corridor for short periods. For example, temporary staging areas could temporarily affect surrounding communities and the respective land uses by disrupting access to properties adjacent to the ROW or precluding some outdoor activities very close to the ROW. These instances are expected to be short-term and infrequent because all of the construction activity would take place within the existing corridor. Other factors, such as air quality, noise, and traffic, could disrupt adjoining land uses as well.

After transmission structure modifications and reconductoring are completed, LADWP would employ the same operation and maintenance activities of the transmission line as it did before implementation of the Project. Therefore, there would be no impact. Operation and maintenance activities would not disrupt established land uses because they would not be substantially different from the existing use of the ROW.

Due to their temporary and intermittent nature, and implementation of GP-34, GP-37, GP-50, and GP-59, impacts resulting from disruptions to established land uses would be adverse, but less than significant. Construction activities would not conflict with environmental plans, policies, or regulations adopted by agencies with jurisdiction over local land uses.

New Haskell Canyon Switching Station
Land uses in the area would be temporarily disrupted by construction activities such as noise, dust, and traffic. Construction of the switching station would temporarily disturb these areas as a result of heavy construction equipment on access roads, and the movement of materials and equipment to the site. Existing access roads would be used for construction and maintenance activities.

Staging areas would also be on vacant land owned by LADWP adjacent to the proposed new switching station. No existing residences or businesses would be displaced, and no established community or subdivision would be divided. The nearest residential subdivision is 0.5 mile south of the proposed switching station site.

Less than significant impacts associated with construction, operation and maintenance activities are expected.

Expansion of Barren Ridge Switching Station
The Barren Ridge Switching Station expansion area would be adjacent to the existing switching station on vacant land owned by LADWP. Staging areas would also be on vacant land near the switching station. Existing access roads would be used for construction and maintenance activities. Less than significant impacts are expected.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

Conflict with any applicable federal, State, or local land use plans, goals, or policies (Criterion LU1)

Impact LU-1: Construction, operation or maintenance would conflict with relevant federal, State, or local land use plans, goals, or policies.

For the Alternative 1 transmission line, the same land use plans (Table 4.2.3-4) and goals and policies outlined for the Alternative 2 transmission line (Table 4.2.3-5), would apply. However, under Alternative 1 transmission line, a BCNM land use zone would be traversed. As described in Table 2.1.3 of the ANF Land Management Plan, the BCNM land use zone is considered not suitable for major utility corridors. the Alternative 1 transmission line would therefore be inconsistent with this ANF Land Management Plan policy. Adoption of Project-specific amendments in the Record of Decision would be needed to ensure the Proposed Action's consistency with the USFS land use policies.

CEQA Significance

Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would traverse a BCNM land use zone, which is considered not suitable for major utility corridors, and would therefore be inconsistent with this ANF Land Management Plan policy. Impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant (refer to CEQA significance discussion under the Proposed Action).

Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use (Criterion LU2)

Impact LU-2: Construction activities would temporarily disrupt, displace, or preclude existing residential land uses.

Some construction-related activities for the Alternative 1 transmission line would require the temporary use of lands for purposes other than their existing uses (i.e., staging areas, access roads, and pulling, tensioning, and splicing sites). The use of these areas could temporarily restrict access to, or the use of, lands that surround them as well. Construction could additionally cause temporary disturbances due to site-specific access limitations and parking restrictions, increased traffic along construction routes and detour routes, increased dust generation and noise, and changes in the overall visual character of an area due to the presence of construction-related equipment, personnel, and associated activities.

Staging areas would be selected on the basis of accessibility to construction locations and proximity to transmission line and substation access roads. Temporary disturbance associated with staging areas are identified in Table 2-3 of Chapter 2. In addition, helicopter staging areas would be required to support helicopter construction of structures within the ANF. The number of wire setup sites used for pulling/tensioner/splicing of conductor wire would vary by route length and specific construction-related needs.

Construction of the Alternative 1 transmission line would require the improvement of some existing access and spur roads to accommodate construction-related heavy equipment; the construction of some new access and spur roads would additionally be needed. Table 2-4 of Chapter 2 provides the estimated temporary and permanent land disturbance acreages associated with these features. The estimated total construction-related temporary disturbance of land for Alternative 1 ranges between 576 to 599 acres (Table 2-14).

Project ground and helicopter construction activities would temporarily disrupt existing residential land uses and residents. With the exception of the unincorporated community of Castaic, residential uses along or near the Alternative 1 transmission line are generally rural. Rural residential uses include the unincorporated communities of Neenach, Holiday Valley Estates, and Paradise Ranch Mobile Home Park. These residents would be subjected to increased noise levels and air quality emissions for the duration of construction. Construction would additionally cause temporary disturbances due to site-specific access limitations, parking restrictions, and increased traffic along construction and detour routes. Construction-related impacts could also cause direct effects on residential land uses within approximately 1,000 feet of either side of a given ROW, or within approximately 1,000 feet of staging areas, substation sites, and new and improved access and spur roads due to the presence of construction crews, heavy equipment operation, and associated crew, equipment, and material access from these sites. Residences within 1,000 feet of construction could be temporarily disturbed by these activities.

Indirect effects could also occur at distances greater than 1,000 feet from construction sites due to the placement of temporary access roads, which could cause limited access to some properties, and the need for construction-related detours through neighborhoods that are not directly affected by construction activities. Although these disturbances would be temporary in nature, restrictions and preclusions of, and inconveniences to, the daily routines and activities of local residences due to construction may be substantial if not managed and residents kept informed.

Due to the proximity of some residential uses to construction-related activities, in conjunction with the intensity of the workforce and equipment needed and the duration of construction itself, the impacts of the Alternative 1 transmission line to residential uses which are outlined above would be considered adverse. With implementation of GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts to residential land uses would be adverse, but less than significant.

CEQA Significance

Construction-related disruptions to residential land uses associated with Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts to residential land uses would be adverse but less than significant.

Impact LU-3: Construction activities would temporarily disrupt, displace, or preclude existing non-residential land uses.

Construction of the Alternative 1 transmission line (especially in the ANF where terrain is steep and access limited) would require the use of non-residential lands for purposes other than their existing uses to accommodate transmission structure placement. Helicopters would also be utilized for the construction of transmission structures to eliminate the need for new access roads to structure locations, and to minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites.

Portions of the impact corridor are used for non-residential uses such as agriculture including livestock grazing and apiaries, resource management, and recreation. Areas adjacent to and within the impact corridor are used for utilities, (including access roads), as well as institutional (church), and industrial facilities. Public, private, and military airports and air fields are also close to the Alternative 1 transmission line. In addition, the Alternative 1 transmission line would traverse USFS land use zones, and Places within the ANF. Although the desired condition and program emphasis for each Place do not specifically address transmission lines, construction of the Alternative 1 transmission line would occur within an existing designated utility corridor; consequently, construction of the Alternative 1 transmission line would not impact the Places that it would traverse.

Within the impact corridor, construction activities associated with transmission structure installation and removal sites, staging areas, and pulling, tensioning and splicing sites would displace or disrupt non-residential land uses. Access to these uses may be blocked or detoured, thus affecting the delivery and/or shipment of goods and services, as well as customer and employee ingress and egress. Additionally, site-specific operations would be impaired or prohibited at some locations due to the need to clear areas for construction equipment and materials. Following the completion of construction, site-specific uses may be compromised if affected areas are not restored to their pre-construction condition.

Construction within an approximate 1,000 feet of either side of (including outside of) the ROW would also result in the same types of effects as described above (Impact LU-2) due to site-specific tower removal, assembly and installation, and pulling, tensioning and splicing activities, the need for temporary access roads, road detours and closures, and primary and secondary staging areas. Although the degree of these indirect effects outside of the ROW would not be expected to be as pronounced as within the ROW itself, impacts to non-residential uses close to construction zones could still be adverse at a site-specific level.

The Quail Lake Sky Park Airport (private) and Castaic Dam Heliport (public) are within one-half mile of the Alternative 1 impact corridor. Other air facilities would be close to the Alternative (see Appendix F, Table F-16 of this Final EIS/EIR). Transmission structure installation activities could temporarily affect aircraft movement within the vicinity of tower pad locations due to their height. Final transmission structure heights would range between 110 and 195 feet. Additionally, the construction of transmission structures within the ANF could temporarily affect aircraft movement, as well as those land uses (both non-residential and residential) that are close to the proposed helicopter staging areas and subject transmission structure sites; these effects may also be adverse at a site-specific scale.

In addition, the Alternative 1 transmission line would involve numerous helicopter flyovers, landings and takeoffs from the helicopter staging areas. Construction-related activities associated with the Alternative 1 transmission line could conflict with the Los Angeles County Sheriff Department's and USFS's helicopter flight activities, including both routine operations and emergency response efforts. Additionally, Federal Aviation Administration (FAA) Advisory Circular AC 91-36 C discourages low-level flyovers within the boundaries of ANF lands. Temporary conflicts with the helicopter activities of the Los Angeles County Sheriff Department and the FAA's AC 91-36 C would be adverse.

As presented in Appendix D, Regulatory Framework (Section D.5 Land Use), FAR Title 14, Part 77 establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.79 miles) of an airport. Before construction, LADWP would consult with the FAA and ensure the filing of all forms and associated specifications per the requirements of Federal Aviation Regulations (FAR) Title 14, Part 77. In addition, before the start of construction, LADWP would consult with the Los Angeles County Sheriff Department and the USFS (including GP-21) to ensure that construction, operation, maintenance, and decommissioning of the Alternative 1 transmission line would not conflict with local aircraft operations or associated safety provisions.

With implementation of GP-21, GP-34, GP-37, and GP-50, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), Alternative 1 transmission line construction-related impacts to residential land uses would be adverse, but less than significant.

CEQA Significance

With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses associated with Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be adverse but less than significant.

Impact LU-4: Operation and maintenance would cause long-term disruption of existing and planned residential land uses.

The Alternative 1 transmission line would require new ROW. The ROW would partially fall within the boundaries of the Mojave, Willow Springs, Centennial, and Northlake Specific Plan areas. The Alternative 1 transmission line would also traverse or lie adjacent to portions of undeveloped residential subdivisions. Based upon the estimates provided in Chapter 2, Table 2-11, the Alternative 1 transmission line would result in the permanent disturbance of between 120 to 199 acres of land. The Alternative 1 transmission line would not remove any residences along the route.

Alternative 1 may result in take of private property including ancillary structure(s) through use of eminent domain or removal of unauthorized encroachments. The use of eminent domain would only occur if negotiations between LADWP and individual property owners do not result in agreement by both parties. This process would be conducted according to California State law. The full extent of this impact is unknown at this time, as negotiations with property owners would not occur until after decisions on the Project route are made by the lead agencies, through the CEQA/NEPA process. In some instances, the LADWP could instead seek an easement on the property, rather than ownership, in fee.

CEQA Significance

LADWP would purchase in full or otherwise acquire the necessary leases or easements for construction, operation and maintenance of these ROWs. As such, LADWP's required acquisition of the rights to construct and operate the transmission line with affected private property owners, in conjunction with its acquisition of the regulatory approvals required for new

ROWs and substation sites, would inherently allow for the preclusion of future residential development. When LADWP could not resolve facility locations in discussions with property owners (e.g., creating the least potential impact to the property, mutual acceptance), LADWP would pay just compensation to the property owners based on the facility locations identified by LADWP. Alternative 1's preclusion of, and incompatibility with, current and future residential land uses within the proposed new 230 kV double-circuit transmission line ROW, and adjacent to existing ROWs (BR-RIN 230 kV transmission line and Castaic-Olive 230 kV transmission line), would be considered adverse but less than significant.

Impact LU-5: Operation and maintenance would cause long-term disruption of existing and planned non-residential land uses.

The Alternative 1transmission line would traverse or fall within one-half mile of lands used for a variety of purposes other than residential, such as agriculture (including livestock grazing), resource management, recreation, electrical power generation, and utilities (primarily the Los Angeles Aqueduct). In addition, non-residential lands within one-half one mile of the Alternative 1 transmission line fall under the ownership or management of State and federal agencies.

The Alternative 1 transmission line would also traverse land planned for wind and solar development on private lands in Kern County (Alta East Wind Project, Alta-Oak Creek Mojave Wind Energy Project, Avalon Wind Project, Catalina Renewable Energy Project, Lower West Wind Energy Project, Pacific Wind Energy Project, PdV Wind Energy Project, RE Distributed Solar Project, Ridge Rider Solar Park Project, Rising Tree Wind Farm, and Windstar Wind Project). These projects have been approved or are currently under Kern County review.

In Los Angeles County, the Alternative 1 transmission line would traverse property that is owned by the Westside Union School District (existing vacant Neenach School).

The Alternative 1 transmission line would be 83 miles in length, 42 miles of which would be either within a federally designated utility corridor (BLM and USFS) or adjacent to existing utility ROWs. While the new or replacement transmission structures along these ROWs would increase the bulk of the existing transmission line corridors, they would not significantly change the character or use of the areas surrounding these ROWs. However, the northern portion of the Alternative 1 transmission line route is used and planned for industrial and power generation facilities and would not be anticipated to result in significant conflicts with, preclusions of, or changes to existing and planned non-residential uses. The majority of the remainder of the Alternative 1 transmission line route consists of existing and planned residential, agricultural and open space (resource management) uses. Potential impacts associated with existing and planned residential uses are addressed above, under Impact LU-4. Placement of the Alternative 1 transmission line in open space and resource management areas may limit activities at some transmission structure-specific locations; however, these limitations would not be anticipated to substantially affect existing and planned non-residential land uses.

Operations and maintenance of the Alternative 1 transmission line would involve periodic inspections, approximately once per year, via helicopter and/or truck. As such, conflicts between the use of helicopters for operations and maintenance and the Los Angeles County Sheriff

Department's and USFS's routine and emergency helicopter operations within the ANF could occur. As discussed above, non-residential lands within one-half one mile of the Alternative 1transmission line fall under the jurisdiction of several State and federal agencies, including the California Department of Fish and Game, California Department of Parks and Recreation, and BLM. In addition, several airports, heliports and landing strips regulated by the FAA and Airport Land Use Commissions (or their respective alternative processes) would be within 3.79 miles of some elements of the Alternative 1 transmission line. The Alternative 1 transmission line would also traverse local jurisdictions. However, no significant preclusions of, or restrictions to, the management and uses of these lands would be anticipated, due to implementation of GP-50.

CEQA Significance

No significant preclusions of, or restrictions to, the management and uses of these lands associated with Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be anticipated, due to implementation of GP-50.

Conflict with military operations (Criterion LU3)

Impact LU-6: Operation would conflict with military operations.

The Alternative 1 transmission line would be within a portion of the 20,000-square-mile R-2508 military range complex. The R-2508 Complex includes all the airspace and associated land presently used and managed by three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards Air Force Base; National Training Center, Fort Irwin; and Naval Air Warfare Center Weapons Division, China Lake. LADWP would provide a complete copy of the Project's application, including the location of the entire transmission line alignment and the heights of structures to be , to the Department of Defense.

CEQA Significance

Review by the Department of Defense would ensure that Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not conflict with military operations.

Impact LU-7: Construction, operation or maintenance of additional energy transport projects within Section 368 energy corridor.

It should be noted that future energy transport projects could be within this designated (Section 368) corridor. Subsequent authorization of project-specific ROWs may affect land use if a future ROW conflicts with existing residential, commercial, recreational, military, or other uses of the area. Short-term impacts to land use within and adjacent to the designated corridor could occur as a result of vegetation removal, road construction, noise, and fugitive dust and air emissions generated during construction activities. Degradation in the quality of the visual landscape for recreational users as well as changes in accessibility could also occur in some areas. There would be potential for take of both property and homes through eminent domain if the proponents of future projects were unable to negotiate agreements with private landowners. Clearing of a ROW for the Alternative 1 transmission line would likely result in the permanent loss of vegetation within and possibly adjacent to the ROW. Residences, commercial uses, recreational activities, livestock grazing, and wildlife habitat could experience short-term disturbance during construction activities. Following completion of the project, the project and its ROW generally would not preclude resumption of many of those activities. The nature, magnitude, and extent of the land use impacts would depend directly on the existing land use in the project area and its compatibility with the nature of the proposed ROW and its associated project.

The designation of Section 368 energy corridors does not include project authorization. Subsequent analyses of project-specific environmental impacts would be conducted during project-specific NEPA analyses for projects seeking ROW authorization within a Section 368 energy corridor. Projects crossing State and private lands would be subject on those lands to applicable State and local environmental regulations, as well as any stipulations required by the applicable State and/or local authorizing agency.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. . Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 51.7). These areas are illustrated in Figure 2-17, the Three-Circuit Tower Mitigation Map.

Conflict with any applicable federal, State, or local land use plans, goals, or policies (Criterion LU1)

Impact LU-1: Construction, operation or maintenance would conflict with relevant federal, State, or local land use plans, goals, or policies

As discussed in Chapter 3, Alternative 2 would traverse multiple jurisdictions which have adopted plans related to land use planning, development, and management. An inconsistency between a proposed project or Alternative and an applicable plan is a legal determination, not a physical impact on the environment. There is no agreed objective standard by which to judge the *degree* of inconsistency or the *significance* of a project's inconsistency with the various policies and objectives enumerated in adopted plans. Inconsistency with a plan alone does not mandate a finding of a significant impact under CEQA or NEPA. Inconsistencies may, however, may be a factor in determining the significance of an underlying physical impact. Table 4.2.3-2 provides a matrix listing both the planning documents reviewed and the Alternatives to which they apply.

TABLE 4.2.3-2. PLANS APPLICABLE TO EACH ALTERNATIVE

Applicable Plan/Alternative	Alternative 1	Alternative 2	Alternative 2a	Alternative 3
FEDERAL				
Angeles National Forest Land Management Plan	x	x	x	x
California Desert Conservation Area (CDCA) Plan	x	x	x	x
REGIONAL				
Southern California Association of Governments Regional Comprehensive Plan and Guide	x	x	x	x
LOCAL				
Kern County General Plan	x	x	x	x
Kern County General Plan – Willow Springs Specific Plan	x	x	x	x
County of Los Angeles General Plan	x	x	x	x
City of Lancaster General Plan 2030				x
City of Palmdale General Plan				x
City of Palmdale – Ritter Ranch Specific Plan				x
City of Palmdale – City Ranch Specific Plan				x

Table 4.2.3-3 presents the consistency of the Alternative 2 transmission line with applicable land use plans and policies.

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TABLE 4.2.3-3. APPLICABLE POLICIES, GOALS, AND OBJECTIVES – ALTERNATIVE 2 NEW 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

AGENCY	PLAN/POLICY	CONSISTENT	EXPLANATION
USDA Forest Service, Pacific Southwest Region	Land Management Plan: Angeles National Forest (2005)		
	National Strategic Plan Goal 4 – Help meet energy resource needs	Yes	Alternative 2 would utilize existing utility corridors within the ANF to deliver electricity from new wind and solar projects in southern Kern County to the Los Angeles Basin. Alternative 2 would not conflict with this policy.
	Forest Goal 4.1b – Support use of renewable resources	Yes	The purpose of the Project is to provide the facilities to interconnect and integrate new wind and solar generation in southern Kern County. With wind and solar energy identified in the Project's purpose and need, Alternative 2 is consistent with this policy that encourages the development of alternative energy sources.
	Forest Goal 7.1 – Minimize the land area needed to support growing public needs	Yes	This goal states that facilities supporting urban infrastructure needs should be clustered on existing sites or designated corridors, minimizing the number of acres encumbered by Special Use Authorizations (SUAs). The Alternative 2 transmission line would occur entirely within a designated existing utility corridor. Utilization of this existing designated utility corridor would minimize the land area needed to support utility infrastructure.
	Developed Areas Interface (DAI) Land Use Zone	Yes	The Alternative 2 transmission line would traverse a DAI land use zone. As described in Tables 2.1.2 and 2.1.3 of the Land Management Plan, the DAI land use zone permits major utility corridors within designated areas and is also considered suitable for authorized motorized use.
	Back Country (BC) Land Use Zone	Yes	The Alternative 2 transmission line would traverse a BC land use zone. As described in Tables 2.1.2 and 2.1.3 of the Land Management Plan, the BC land use zone permits major utility corridors within designated areas and is also considered suitable for authorized motorized use.
	Back Country Non-Motorized (BCNM) Land Use Zone	Yes	The Alternative 2 transmission line would not traverse a BCNM land use zone. As described in Table 2.1.3 of the Land Management Plan, the BCNM land use zone is considered not suitable for major utility corridors.
	ANF S1-Pacific Crest Trail	Maybe*	Standard ANF S-1 requires protection of the scenic foreground from the PCT. This Forest Standard may not be met, and if not the plan would be amended to ensure that the Proposed Action is in compliance with the ANF Land Management Plan. See Section 4.2.9, Visual Resources, for further explanation
	Pacific Crest Trail Management Plan, Angeles National Forest (Sept. 1980)	Yes	The Plan does not include any policies pertaining to the effects on the existing use or recreational value of the PCT from new projects constructed in the vicinity of the PCT. Alternative 2 would not conflict with this Plan.
	S10 – Scenic Integrity Objectives	No	Alternative 2 would not meet Scenic Integrity Objectives. See Section 4.2.9, Visual Resources, for further explanation.
	S42 – Include Raptor Safety in Permits	Yes	Appropriate raptor protection would be included either as GPs agreed to by LADWP, or as mitigation selected by the USFS Authorized Officer in the Record of Decision.
	S47 – Apply 5-Step Screening for Riparian Conservation Areas	No	Impacts to RCAs would be avoided to the greatest extent possible but it is not anticipated that all negative impacts to RCAs would be eliminated.
	S59 – Wild/Scenic River	Yes	The Alternative 2 transmission line would not negatively affect the free flowing nature or outstanding remarkable values of an eligible Wild and Scenic Rivers (geology and history); therefore no suitability study is required. Refer to the Forest Service Plans and Policies discussion below.

AGENCY	PLAN/POLICY	CONSISTENT	EXPLANATION
USDI Bureau of Land Management, Ridgecrest Field Office	California Desert Conservation Area Plan (1980, as amended)		
	New gas, electric, and water transmission facilities and cables for interstate communication may be allowed only within designated corridors.	Yes	The Alternative 2 transmission line would utilize a BLM-designated utility corridor (Corridor A). This utility corridor is also a 368 energy corridor (multi-modal corridor 23-106).
USDA Natural Resources Conservation Service	Farmland Protection Policy Act	Yes	Please see Section 4.2.4, Agricultural Resources, for a discussion regarding compliance with the FPPA.
California Department of Education	California Department of Education School Site and Selection and Approval Guide		
	5 CCR Selection 14010l	Yes	The Alternative 2 transmission line would not be sited within 150 feet of an existing school.
Southern California Association of Governments	Regional Comprehensive Plan and Guide		
	Growth Management Policy D-1(iii)	Yes	The Alternative 2 transmission line would involve the construction and operation of new electrical utility structures, which would serve to meet growth within Southern California.
Kern County	Kern County General Plan (2009)		
	Appendix B: Rural Community Development Guidelines and Requirements (Land Use) – Compatibility of industrial development within a rural community	Yes	According to the Kern County Eastern Section and Mojave Priority Area Maps from the Land Use, Open Space, and Conservation Element, Alternative 2 would not fall within any areas designated as Rural Community.
	Energy Element Goal: To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects	Yes	Alternative 2 would access Kern County's electrical resources. General Practices and mitigation measures would minimize environmental impacts.
	Transmission Line Policy 1: The County should encourage the development and upgrading of transmission lines and associated facilities (e.g., substations) as needed to serve Kern County's residents and access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety issues	Yes	Implementation of Alternative 2 serves to comply with this policy.
	Transmission Line Policy 2: The County shall review all proposed transmission lines and their alignments for conformity with the Land Use, Conservation, and Open Space Element of this General Plan	Yes	Alternative 2 would be reviewed by Kern County for conformity with the Land Use, Conservation and Open Space Element of the General Plan.
	Transmission Line Policy 3: In reviewing proposals for new transmission lines and/or capacity, the County should assert a preference for upgrade of existing lines and use of existing corridors where feasible	Yes	Alternative 2 involves transmission line reconductoring and the placement of a new transmission line adjacent to existing transmission line corridors
	Transmission Line Policy 4: The County should work with other agencies in establishing routes for proposed transmission lines	Yes	LADWP has provided notice of the Proposed Action and Alternatives to Kern County.
	Transmission Line Policy 5: The County should discourage the siting of above-ground transmission lines in visually sensitive areas	Yes	General Practices and mitigation measures associated with the Alternative 2 would minimize environmental impacts to visually sensitive areas.
	Transmission Line Policy 6: The County should encourage new transmission lines to be sited/configured to avoid or minimized collision and electrocution hazards to raptors	Yes	Appropriate raptor protection would be included either as GPs agreed to by LADWP, or as mitigation selected by the USFS Authorized Officer in the Record of Decision.

AGENCY	PLAN/POLICY	CONSISTENT	EXPLANATION
	Goal 3: Encourage retention of productive agricultural and dormant mineral resources by imposing a restriction on allowing urban type land uses on nearby adjacent lands Policy 3: To ensure compliance with applicable State and federal laws and to protect biological resources present in the Specific Plan area	Yes	Section 4.3.1 (Biological Resources) considered current State and federal laws and regulations in the analysis of the Project impacts. LADWP would be required to follow current State and federal laws and regulations protecting biological resources.
Los Angeles County	County of Los Angeles General Plan (1993)		
	General Goals and Policies • Policy 23 – Ensure compatible development in non-urban areas • Goal: Conservation of resources and environmental protection	Yes	Alternative 2 would be located across rural portions of northern Los Angeles County, and would primarily require the construction of a new ROW. However, Alternative 2 would primarily locate the new transmission line adjacent to existing utility infrastructure. It therefore would not introduce a new land use that is inconsistent with existing surroundings.
	Land Use (Quality, Compatible Design) • Policy 14 – Ensure Project design is compatible with natural and manmade environment. • Goal: To encourage high quality design in all development projects, compatible with, and sensitive to, the natural and manmade environment	Yes	The Alternative 2 transmission line would be constructed primarily in a new ROW that is parallel to an existing transmission line. As new utility infrastructure would be immediately adjacent to existing industrial land uses (e.g., transmission lines and substations), it would be compatible with the surrounding environment. Additionally, other resource sections provide GPs and mitigation measures necessary to reduce potential impacts related to severe hazard areas, such as flood-prone areas, active fault zones, steep hillsides, and landslide areas to the maximum extent feasible. With full implementation of these measures, Alternative 2 would be consistent with this policy.

*Standard ANF S-1 may be met if towers are placed far enough from the Pacific Crest Trail to avoid impacting the foreground views. Since locations of towers are not known, this LMP standard is listed as a “maybe” for consistency with the ANF LMP.

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USFS Policies

In addition to the discussion above (Table 4.2.3-5), as part of the Project approval, and before construction, the USFS would issue a Special Use Authorization, which would involve amending the 2005 ANF Land Management Plan, as necessary, to ensure consistency with the USFS management direction for affected areas within the ANF. It is currently anticipated that two Project-specific amendments would be required for the Alternative 2 to allow for its inconsistencies with the Land Management Plan's Standards S10 (Scenic Integrity Objectives), and S47 (5-Step Screening for Riparian Conservation Areas). A third Project-specific amendment may be needed for Standard ANF S-1, (Foreground Views from Pacific Crest Trail). The USFS would also include in its Special Use Authorizations any construction-related activities which would be outside of the ROW widths to ensure compliance with USFS plans and policies. Adoption of Project-specific amendments in the Record of Decision would be needed to ensure the Proposed Action's consistency with the USFS land use policies identified in Table 4.2.3-5.

Following construction, temporary pulling, tensioning and splicing sites, staging areas, and access or spur roads would be closed and restored per the requirements of the USFS and the applicable mitigation measures specified in Sections 4.2.9 (Visual Resources), 4.3.1 (Biological Resources), 4.3.2 (Geology, Seismicity, Soils, and Paleontology), and 4.3.3 (Water Resources), and new or existing access and spur roads would be maintained in accordance with the USFS's approval. Therefore, the Alternative 2 transmission line would be consistent with the USFS land use policies identified in Table 4.2.3-5, and no impacts would occur.

Local Plans and Policies

Table 4.2.3-4 presents the consistency of the Alternative 2 transmission line with the local land use plans and policies. Although implementation of the Alternative 2 transmission line would require new ROW and substation sites, these features would not conflict with the land use plans and policies identified in Table 4.2.3-5.

CEQA Significance

As part of the Project's approval, and before construction, the USFS would issue a Special Use Authorization, which would involve amending the 2005 ANF Land Management Plan, as necessary, to ensure consistency with the USFS's management direction for affected areas within the ANF. The new 230 kV double-circuit transmission line associated with Alternative 2 would require Project-specific plan amendments for Standards S10 (Scenic Integrity Objectives) and S47 (Riparian Conservation Areas). Through the plan amendment process, the new 230 kV double-circuit transmission line would be consistent with USFS land use policies. In addition, GP-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Impacts of Alternative 2, including common Project components and the Alternative 2 transmission line, related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use (Criterion LU2)

Impact LU-2: Construction activities would temporarily disrupt, displace, or preclude existing residential land uses.

Some construction-related activities for the Alternative 2 transmission line would require the temporary use of lands for purposes other than their existing uses (i.e., staging areas, access roads, and pulling, tensioning, and splicing sites). The use of these areas could temporarily restrict access to, or the use of, lands that surround them as well. Construction would additionally cause temporary disturbances due to site-specific access limitations and parking restrictions, increased traffic along construction routes and detour routes, increased dust generation and noise, and changes in the overall visual character of an area due to the presence of construction-related equipment, personnel, and associated activities.

Staging areas would be selected on the basis of accessibility to construction locations and proximity to transmission line and substation access roads. Temporary disturbance associated with staging areas are identified in Table 2-5 of Chapter 2. The number of sites used for pulling/tensioning/splicing of conductor wire would vary by route length and specific construction-related needs.

Construction of the Alternative 2 transmission line would require the improvement of some existing access and spur roads to accommodate construction-related heavy equipment; the construction of some new access and spur roads would additionally be needed. Table 2-4 of Chapter 2 provides the estimated temporary and permanent land disturbance acreages associated with these features. The estimated total construction-related temporary disturbance of land for the Alternative 2 transmission line ranges between 398 to 399 acres (Table 2-11).

Alternative 2 transmission line ground construction activities would temporarily disrupt existing land uses and residents. Residential land uses along or near the Alternative 2 transmission line are generally rural. Rural residential uses include the unincorporated communities of Willow Springs, Elizabeth Lake, Green Valley, and Antelope Acres. These residents would be subjected to increased noise levels and air quality emissions for the duration of construction. Construction would additionally cause temporary disturbances due to site-specific access limitations, parking restrictions, and increased traffic along construction and detour routes.

Construction-related impacts typically cause direct effects on land uses within approximately 1,000 feet of either side of a given ROW, or within approximately 1,000 feet of staging areas, substation sites, and new and improved access and spur roads due to the presence of construction crews, heavy equipment operation, and associated crew, equipment, and material access from these sites. Residences within 1,000 feet of construction could experience temporary disturbances as a result of these activities.

Indirect effects could also occur at distances greater than 1,000 feet from construction sites due to the placement of temporary access roads, which could cause limited access to some properties, and the need for construction-related detours through neighborhoods that are not directly affected by construction activities. Although these disturbances would be temporary in nature, restrictions and preclusions of, and inconveniences to, the daily routines and activities of local residences due to construction may be considered significant if not carefully managed and residents kept informed.

Construction would involve the placement of temporary structures to support the temporary transmission line while the original structures holding the line are replaced with the new three-circuit structures. The temporary transmission line construction would temporarily disrupt or diminish the use of existing residential and non-residential land uses by blocking or partially blocking access. Residents would be subjected to increased noise levels and air quality emissions for the duration of Project construction (six to nine months). Please refer to Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation).

With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 2 transmission line to residential land uses would be adverse, but less than significant.

CEQA Significance

Construction-related disruptions to residential land uses associated with Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts to residential land uses would be adverse but less than significant.

Impact LU-3: Construction activities would temporarily disrupt, displace, or preclude existing non-residential land uses.

As addressed under Impact LU-2, above, construction of portions of the Alternative 2 transmission line would require the use of lands for purposes other than their existing uses to accommodate transmission structure placement areas, staging areas, access roads, and pulling, tensioning and splicing sites. Construction activities would also temporarily restrict or preclude access to, and potentially the use of, lands adjacent to construction-related work areas. Lands used for construction could additionally be damaged or otherwise impaired to a degree that their existing (i.e., pre-construction) uses are impaired.

Portions of the impact corridor are used for non-residential uses such as agriculture, including livestock grazing and apiaries, resource management, and recreational purposes. Areas adjacent to the impact corridor are used for commercial, public use, utilities (including access roads), and industrial facilities. Public and private airports are also close to—but over one-half mile from—the Proposed Action (see Appendix F, Table F-16 of this Final EIS/EIR). In addition, the Alternative 2 transmission line would traverse USFS land use zones, special designations, and Places within the ANF. Although the desired condition and program emphasis for each Place do not specifically address transmission lines, construction of the Alternative 2 transmission line would occur within an existing designated utility corridor; consequently, construction of the

Alternative 2 transmission line would not impact the Places that it would traverse. In addition, a Special Designation Overlay is crossed by the Alternative 2 transmission line (San Francisquito Canyon, eligible Wild and Scenic River). Although the Alternative 2 transmission line would traverse this Special Designation Overlay, it is within an existing utility corridor which in itself is a Special Designation Overlay. A USFS fire station and ranger station (unincorporated community of Green Valley) are also within one-half mile of the Alternative 2 transmission line.

Within the impact corridor, construction activities associated with transmission structure installation and removal sites, staging areas, and pulling, tensioning and splicing sites would displace or disrupt non-residential land uses. Access to these uses may be blocked or detoured, thus affecting the delivery and/or shipment of goods and services, as well as customer and employee ingress and egress. Additionally, site-specific operations would be impaired or prohibited at some locations due to the need to clear areas for construction equipment and materials. Following the completion of construction, site-specific uses may be compromised if affected areas are not restored to their pre-construction condition.

Construction within roughly 1,000 feet of either side of (including outside of) the Alternative 2 transmission line ROW would also result in the same types of effects as described above (Impact LU-2) due to site-specific tower removal, assembly and installation, and pulling, tensioning and splicing activities, the need for temporary access roads, road detours and closures, and primary and secondary staging areas. Although the degree of these indirect effects outside the ROW is not expected to be as pronounced as within the ROW itself, impacts to non-residential uses close to construction zones could still be adverse at a site-specific level.

According to the Kern County Airport Land Use Compatibility Plan (2008), the Proposed Action would fall within the following compatibility zones of the Mojave Airport: B2 (Extended Approach/Departure Zone) and C (Common Traffic Pattern Zone). Although there are no aircraft support facilities (airports, landing strips, heliports, and helipads) within one-half mile of the Project impact corridor, tower installation activities could temporarily affect aircraft movement within the vicinity of tower pad locations due to their height. Final transmission structure heights would range between 110 and 195 feet. Additionally, the construction of transmission structures within the ANF could temporarily affect aircraft movement, as well as non-residential and residential land uses close to tower sites; these effects may also be adverse at a site-specific scale.

As presented in Appendix D, Regulatory Framework (Section D.5 Land Use), FAR Title 14, Part 77 establishes standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.79 miles) of an airport. Before construction, LADWP would consult with the FAA and ensure the filing of all forms and associated specifications per the requirements of FAR Title 14, Part 77. In addition, before the start of construction, LADWP would consult with the Los Angeles County Sheriff Department and the USFS (per GP-21) to ensure that construction, operation, maintenance, and decommissioning of the Alternative 2 transmission line would not conflict with local aircraft operations or associated safety provisions.

With implementation of GP-21, GP-34, GP-37, and GP-50, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and

Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 2 transmission line to non-residential land uses would be adverse, but less than significant.

CEQA Significance

With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses associated with Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be adverse, but less than significant.

Impact LU-4: Operation and maintenance would cause long-term disruption of existing and planned residential land uses.

The Alternative 2 transmission line would require new ROW. The ROW would partially fall within the boundaries of the Mojave, Soledad Mountain-Elephant Butte, and Willow Springs Specific Plan areas. In addition, the Alternative 2 transmission line would traverse or lie adjacent to portions of undeveloped residential subdivisions. Based upon the estimates provided in Chapter 2, Table 2-11, the Alternative 2 transmission line would result in the permanent disturbance of between 57 to 70 acres of land. The transmission line would not remove any residences along the Alternative 2 route.

Alternative 2 may result in take of private property including ancillary structure(s) through use of eminent domain or removal of unauthorized encroachments. The use of eminent domain would only occur if negotiations between LADWP and individual property owners do not result in agreement by both parties. This process would be conducted according to California State law. The full extent of this impact is unknown at this time, as negotiations with property owners would not occur until after decisions on the Project route are made by the lead agencies, through the CEQA/NEPA process. In some instances, the LADWP could instead seek an easement on the property, rather than ownership, in fee.

CEQA Significance

LADWP would purchase in full or otherwise acquire the necessary leases or easements for construction, operation and maintenance of these ROWs. As such, LADWP's required acquisition of the rights to construct and operate Alternative 2 with affected private property owners, in conjunction with its acquisition of the regulatory approvals required for new ROWs and substation sites, would inherently allow for the preclusion of future residential development. When LADWP could not resolve facility locations in discussions with property owners (e.g., creating the least potential impact to the property, mutual acceptance), LADWP would pay just compensation to the property owners based on the facility locations identified by LADWP. Alternative 2's preclusion of, and incompatibility with, current and future residential land uses within the proposed new 230 kV double-circuit transmission line ROW, and adjacent to existing ROWs (BR-RIN)230 kV transmission line and Castaic-Olive 230 kV transmission line), would be considered adverse but less than significant.

Impact LU-5: Operation and maintenance would cause long-term disruption of existing and planned non-residential land uses.

As addressed in Chapter 3, the Alternative 2 transmission line would traverse or fall within one-half mile of lands used for a variety of purposes other than residential, such as agriculture including livestock grazing, resource management, and recreation.

The Alternative 2 transmission line would traverse BLM public land (managed by the Ridgecrest Field Office). Applications for solar energy projects on this land have been submitted to the BLM and are pending review. As described in Chapter 3, this land has been designated as a utility corridor (Corridor A) and Section 368 energy corridor (multi-modal corridor 23-106). Alternative 2 would also traverse land planned for wind and solar development on private lands in Kern County (Alta East Wind Project, Alta-Oak Creek Mojave Wind Energy Project, Antelope Valley Solar Project, Avalon Wind Project, RE Distributed Solar Project, Ridge Rider Solar Park Project, Rising Tree Wind Farm, Rosamond Solar Array Project, Willow Springs Solar Array Project) as well as for water banking (Antelope Valley Water Bank). These projects have been approved or are currently under Kern County review. The majority of the Alternative 2 transmission line within Kern County is designated for resource management, residential, and agricultural uses. The Antelope Valley California Poppy Reserve, managed by the State Department of Parks and Recreation, is situated 0.5 mile west of the Alternative 2 transmission line. Within the ANF, the Alternative 2 transmission line would be within a USFS designated utility corridor and a 368 energy corridor (electric-only corridor 264-265).

As stated above, the Alternative 2 transmission line would be placed either in a designated utility corridor or adjacent to existing utility ROWs. While the new or replacement transmission structures along these ROWs would increase the bulk of the existing transmission line corridors, they would not substantially change the character or use of the areas surrounding these ROWs. The area surrounding the northern portion of the Alternative 2 transmission line is primarily used and/or planned for industrial and power generation facilities and would not be anticipated to result in significant conflicts with, preclusions of, or changes to existing and planned non-residential uses. The majority of the remainder of the Alternative 2 transmission line consists of existing and planned residential, agricultural and open space (resource management) uses. Potential impacts associated with existing and planned residential uses are addressed above, under Impact LU-4. Placement of the Alternative 2 transmission line in areas used for open space and resource management may limit some activities at some transmission structure-specific locations; however, these limitations would not be anticipated to substantially affect existing and planned non-residential land uses.

In addition, several airports, heliports and landing strips regulated by the FAA and Airport Land Use Commissions (or their respective alternative processes) would be within 3.79 miles of some elements of the Alternative 2 transmission line. Non-residential lands within one-half mile and in the vicinity of the Project fall under the jurisdiction of federal, State and local agencies including the BLM, USFS, Department of Defense (DoD), and California Department of Parks and Recreation. The Alternative 2 transmission line would also traverse or be near local jurisdictions. No significant preclusions of, or restrictions to, the management and uses of these lands are anticipated, due to implementation of GP-50.

CEQA Significance

No significant preclusions of, or restrictions to, the management and uses of these lands associated with Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be anticipated, due to implementation of GP-50.

Conflict with military operations (Criterion LU3)

Impact LU-6: Operation would conflict with military operations.

The Alternative 2 transmission line would be within a portion of the 20,000-square-mile R-2508 military range complex. The R-2508 Complex includes all the airspace and associated land presently used and managed by three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards Air Force Base; National Training Center, Fort Irwin; and Naval Air Warfare Center Weapons Division, China Lake. LADWP would provide a complete copy of the Proposed Action or Alternative's application, including the location of the entire transmission line alignment and the heights of structures, to the Department of Defense.

CEQA Significance

Review by the Department of Defense would ensure that Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not conflict with military operations.

Impact LU-7: Construction, operation or maintenance of additional energy transport projects within Section 368 energy corridor.

Future energy transport projects could be within this designated (Section 368) corridor. Subsequent authorization of project-specific ROWs may affect land use if a future ROW conflicts with existing residential, commercial, recreational, military, or other uses of the area. Short-term impacts to land use within and adjacent to the designated corridor could occur as a result of vegetation removal, road construction, noise, and fugitive dust and air emissions generated during construction activities. Degradation in the quality of the visual landscape for recreational users as well as changes in accessibility could also occur in some areas. There would be potential for take of both property and homes through eminent domain if the proponents of future projects were unable to negotiate agreements with private landowners. Clearing of a ROW would likely result in the permanent loss of vegetation within and possibly adjacent to the ROW. Residences, commercial uses, recreational activities, livestock grazing, and wildlife habitat could experience short-term disturbance during construction activities. Following completion of the project, the project and its ROW generally would not preclude resumption of many of those activities. The nature, magnitude, and extent of the land use impacts would depend directly on the existing land use in the project area and its compatibility with the nature of the proposed ROW and its associated project.

The designation of Section 368 energy corridors does not include project authorization. Subsequent analyses of project-specific environmental impacts would be conducted during project-specific NEPA analyses for projects seeking ROW authorization within a Section 368 energy corridor. Projects crossing State and private lands would be subject on those lands to applicable State and local environmental regulations, as well as any stipulations required by the applicable State and/or local authorizing agency.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

In areas of ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts, including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6), Elizabeth Lake, and Green Valley (milepost 44.6 to 46 and milepost 50.8 to 51.7). This mitigation would be utilized in the same areas that were identified for Three-Circuit Tower Mitigation for the Proposed Project, with the exception of approximately five miles through the unincorporated community of Green Valley, which would not utilize this mitigation. These areas are illustrated in Figure 2-17, the Three-Circuit Tower Mitigation Map.

Impacts associated with the Alternative 2a transmission line would primarily be the same as impacts associated with the Alternative 2 transmission line. This Alternative transmission line, however, would introduce a reroute of the proposed transmission line around the unincorporated community of Green Valley, eliminating many of the land use impacts that occur in that community under the transmission line for the other Alternatives. The reroute would require helicopter construction along Alternative 2a for two miles.

Conflict with any applicable federal, State, or local land use plans, goals, or policies (Criterion LU1)

Impact LU-1: Construction, operation or maintenance would conflict with relevant federal, State, or local land use plans, goals, or policies

For the Alternative 2a transmission line, the same land use plans (Table 4.2.3-4) and goals and policies outlined for Alternative 1 (Table 4.2.3-5), would apply. However, for the Alternative 2a transmission line, a BCNM land use zone would also be traversed. As described in Table 2.1.3 of the ANF Land Management Plan, the BCNM land use zone is considered not suitable for major utility corridors; therefore, the Alternative 2a transmission line would be inconsistent with the ANF Land Management Plan. In addition, Alternative 2a would cross the PCT several miles from existing transmission line crossings, giving the effect of spreading the impact along the trail instead of consolidating it. The Alternative 2a transmission line would also run along and close to the PCT for two miles, resulting in a greater impact on visual resources. Standard ANF S-1 requires protection of the scenic foreground from the PCT. This Forest Standard may not be met, and if not , adoption of Project-specific amendments in the Record of Decision would be needed to ensure the Proposed Action's consistency with the USFS land use policies.

CEQA Significance

Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would traverse a BCNM land use zone, which is not considered suitable for major utility corridors, and would therefore be inconsistent with the ANF Land Management Plan. The Alternative 2a transmission line would also result in visual impacts to the PCT. Standard ANF S-1 requires protection of the scenic foreground from the PCT. This Forest Standard may not be met, and if not, the plan would need to be amended to ensure compliance with the ANF Land Management Plan. Impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant (refer to CEQA significance discussion under the Alternative 2).

Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use (Criterion LU2)

Impact LU-2: Construction activities would temporarily disrupt, displace, or preclude existing residential land uses.

With the exception of the unincorporated community of Green Valley, residential properties affected by the Alternative 2a transmission line would remain the same as those described for the Alternative 2 transmission line. Project ground and helicopter construction activities would temporarily disrupt existing residential land uses and residents within and/or adjacent to the ANF, primarily in and around the vicinity of the unincorporated community of Green Valley. These residents would be subjected to increased noise levels and air quality emissions for the duration of construction. Construction would additionally cause temporary disturbances due to site- specific access limitations and parking restrictions, and increased traffic along construction and detour routes.

As previously stated in the discussion of Alternative 2, an area of five acres in size would be required for each primary staging area. Helicopter staging areas would also be required to support helicopter construction of transmission structures within the ANF. Other construction activities would require the improvement and construction of some new access and spur roads to accommodate construction-related heavy equipment. The estimated total construction-related temporary disturbance of land for the Alternative 2a transmission line ranges between 405 to 409 acres (Chapter 2, Table 2-11).

Construction-related disruptions to residential land uses would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 2a transmission line to residential land uses would be adverse, but less than significant.

CEQA Significance

Construction-related disruptions to residential land uses associated with Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts to residential land uses would be adverse, but less than significant.

Impact LU-3: Construction activities would temporarily disrupt, displace, or preclude existing non-residential land uses.

Construction of portions of the Alternative 2a transmission line would require the use of non-residential lands (primarily ANF) for purposes other than their existing uses to accommodate transmission structure placement. Helicopters would also be utilized for the construction of transmission structures to eliminate the need for new access roads to structure locations, and to minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. With the exception of possible differences with ANF resource management and recreational uses, other construction-related impacts associated with non-residential uses with the Alternative 2a transmission line would be the same for the Alternative 2 transmission line.

Public and private airports are also close to, but over one-half mile from, the Alternative 2a transmission line (see Appendix F, Table F-16 of this Final EIS/EIR). In addition, the Alternative 2a transmission line would involve numerous helicopter flyovers, landings and takeoffs from the helicopter staging areas. Construction-related activities associated with the Alternative 2a transmission line could conflict with the Los Angeles County Sheriff Department's and USFS's helicopter flight activities, including both routine operations and emergency response efforts. Temporary conflicts with the helicopter activities of the Los Angeles County Sheriff Department and the FAA's AC 91-36 C would be adverse.

As presented in Appendix D, Regulatory Framework (Section D.5 Land Use), FAR Title 14, Part 77 establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.79 miles) of an airport. Before construction, LADWP would consult with the FAA and ensure the filing of all forms and associated specifications per the requirements of FAR Title 14, Part 77. In addition, before the start of construction, LADWP would consult with the Los Angeles County Sheriff Department and the USFS (including GP-21) to ensure that construction, operation, maintenance, and decommissioning of Alternative 1 would not conflict with local aircraft operations or associated safety provisions.

With implementation of GP-21, GP-34, GP-37, and GP-50, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 2a transmission line to residential land uses would be adverse, but less than significant.

CEQA Significance

With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses associated with Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be adverse, but less than significant.

Impact LU-4: Operation and maintenance would cause long-term disruption of existing and planned residential land uses.

The Alternative 2a transmission line would require new ROW. The ROW would partially fall within the boundaries of the Mojave, Soledad Mountain-Elephant Butte, and Willow Springs Specific Plan areas. In addition, the Alternative 2a transmission line would traverse or lie adjacent to portions of undeveloped residential subdivisions. Based upon the estimates provided in Chapter 2, Table 2-11, the Alternative 2a transmission line would result in the permanent disturbance of between 59 to 75 acres of land. The Alternative 2a transmission line would not remove any residences along the route.

Similar to Alternative 2 above, Alternative 2a may result in take of private property including ancillary structure(s) through use of eminent domain or removal of unauthorized encroachments. The use of eminent domain would only occur if negotiations between LADWP and individual property owners do not result in agreement by both parties. This process would be conducted according to California State law. The full extent of this impact is unknown at this time, as negotiations with property owners would not occur until after decisions on the Project rout are made by the lead agencies, through the CEQA/NEPA process. In some instances, the LADWP could instead seek an easement on the property, rather than ownership in fee.

Operation and maintenance of the Alternative 2a transmission line would involve periodic inspections, approximately once per year, via helicopter and/or truck. In comparison to the Alternative 2 transmission line, the Alternative 2a transmission line would likely result in a greater number of helicopter inspections due to the number of transmission structures that would not be accessible by truck. However, the long-term operation and maintenance of the Alternative 2a transmission line would not differ substantially from the Alternative 2 transmission line. As such, preclusion of, or incompatibility with, current and future residential land uses for the Alternative 2a transmission line would be considered adverse but less than significant. Outside of the ANF, all other long-term residential land use impacts associated with the Alternative 2a transmission line would be the same as described for the Alternative 2 transmission line.

Impact LU-5: Operation and maintenance would cause long-term disruption of existing and planned non-residential land uses.

Operations and maintenance of the Alternative 2a transmission line would involve periodic inspections, approximately once per year, via helicopter and/or truck. In comparison to the Alternative 2 transmission line, the Alternative 2a transmission line would likely result in a greater number of helicopter inspections due to the number of transmission structures that would not be accessible by truck. The long-term operation and maintenance of the Alternative 2a transmission line would not differ substantially from the Alternative 2 transmission line. As such, preclusion of, or incompatibility with, non-residential land uses for the Alternative 2a transmission line would be considered adverse but less than significant.

However, conflicts could occur between the Los Angeles County Sheriff Department and USFS over routine and emergency helicopter operations within the ANF. Additionally, operations and maintenance of the Alternative 2a transmission line may periodically conflict with, or otherwise impede, other operations within the ANF, such as ranger stations, fire stations, and private and public communication and utility facilities. The Alternative 2a transmission line is the only transmission line among the Alternatives that would not be entirely within designated utility corridors on National Forest System lands. The ANF LMP gives preference to placing transmission lines within these designated corridors, although it is not required, and no plan amendment specific to this impact would be required for the Alternative 2a transmission line. See impact LU-1 for Project-specific plan amendments which would be required for the Alternative 2a transmission line.

Outside the ANF, all other long-term non-residential land use impacts associated with the Alternative 2a transmission line would be the same as described for the Alternative 2 transmission line.

CEQA Significance

No significant preclusions of, or restrictions to, the management and uses of these lands associated with Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be anticipated, due to implementation of GP-50.

Conflict with military operations (Criterion LU3)

Impact LU-6: Operation would conflict with military operations.

The Alternative 2a transmission line would be within a portion of the 20,000-square-mile R-2508 military range complex. The R-2508 Complex includes all the airspace and associated land presently used and managed by three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards Air Force Base; National Training Center, Fort Irwin; and Naval Air Warfare Center Weapons Division, China Lake. LADWP would provide a complete copy of the Project's application to the Department of Defense, including the location of the entire transmission line alignment and the heights of structures.

CEQA Significance

Review by the Department of Defense would ensure that Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not conflict with military operations.

Impact LU-7: Construction, operation or maintenance of additional energy transport projects within Section 368 energy corridor.

Future energy transport projects could be within this designated (Section 368) corridor. Subsequent authorization of project-specific ROWs may affect land use if a future ROW conflicts with existing residential, commercial, recreational, military, or other uses of the area. Short-term impacts to land use within and adjacent to the designated corridor could occur as a result of vegetation removal, road construction, noise, and fugitive dust and air emissions generated during construction activities. Degradation in the quality of the visual landscape for recreational users as well as changes in accessibility could also occur in some areas. There would be potential for take of both property and homes through eminent domain if the proponents of future projects were unable to negotiate agreements with private landowners. Clearing of a ROW would likely result in the permanent loss of vegetation within and possibly adjacent to the ROW. Residences, commercial uses, recreational activities, livestock grazing, and wildlife habitat could experience short-term disturbance during construction activities. Following completion of a future project, the future project and its ROW generally would not preclude resumption of many of those activities. The nature, magnitude, and extent of the land use impacts would depend directly on the existing land use in the future project area and its compatibility with the nature of the proposed ROW and its associated project.

The designation of Section 368 energy corridors does not include project authorization. Subsequent analyses of project-specific environmental impacts would be conducted during project-specific NEPA analyses for future projects seeking ROW authorization within a Section 368 energy corridor. Projects crossing State and private lands would be subject on those lands to applicable State and local environmental regulations, as well as any stipulations required by the applicable State and/or local authorizing agency.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Three-Circuit Tower Mitigation

In areas where there are ROW expansion constraints and where LADWP has existing 230 kV transmission lines, LADWP is proposing to construct three-circuit towers to carry the existing BR-RIN circuit and two new BR-HC circuits. This would avoid various impacts including the acquisition of residential property in the unincorporated communities of Willow Springs (milepost 27.1 to 27.6). Please refer to the small inset map on Figure 2-17.

Avenue L Re-route

To avoid acquisition of private property, a portion of Alternative 3 from mile marker 45.2 to 46.7 was moved to parallel a smaller distribution line south along 90th Street West and then east along West Avenue "L." Refer to Figure 2-25, Avenue L Re-route on Alternative 3.

Conflict with any applicable federal, State, or local land use plans, goals, or policies (Criterion LU1)

Impact LU-1: Construction, operation or maintenance would conflict with relevant federal, State, or local land use plans, goals, or policies.

The Alternative 3 transmission line would be within the same jurisdictions as Alternative 2. However, under Alternative 3, lands under the jurisdiction of the City of Lancaster and City of Palmdale would also be traversed. Table 4.2.3-4 provides the consistency review for these cities.

TABLE 4.2.3-4. APPLICABLE POLICIES, GOALS, AND OBJECTIVES – ALTERNATIVE 3 NEW 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

AGENCY	PLAN/POLICY	CONSISTENT	EXPLANATION
City of Lancaster	City of Lancaster General Plan 2030		
	Policy 3.6.6 Specific Action 3.6.6(a)	Yes	Alternative 3 would incorporate alternative energy resources (wind and solar energy).
City of Palmdale	City of Palmdale General Plan		
	Policy ER8.1	Yes	The Alternative 3 transmission line would not traverse important farmland within the city of Palmdale. As such, no conflicts with this policy would occur.
	Policy ER8.2	Yes	The Alternative 3 transmission line would not traverse important farmland within the city of Palmdale. As such, no conflicts with this policy would occur.
	Policy S2.6.1	Yes	LADWP would implement industry-accepted methods and materials for construction of Alternative 3.
City of Palmdale	City Ranch Specific Plan		
	Policy 8: Ensure that development respects the unique character of the natural environment and surrounding development patterns	Yes	Alternative 3's impact on the natural environment has been evaluated in this Final EIS/EIR. This Final EIS/EIR includes mitigation measures to reduce impacts to the environment as discussed in the response to these policies and other City plans.

AGENCY	PLAN/POLICY	CONSISTENT	EXPLANATION
	Ritter Ranch Specific Plan		
City of Palmdale	Objective 4.1: Provide open space areas for conservation, recreation, leisure and aesthetic purposes	Yes	The Alternative 3 transmission line would be placed adjacent to an existing ROW and continue an existing land use (electrical transmission corridor).

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant (refer to CEQA significance discussion under the Proposed Action).

Preclude a permitted land use, or create a disturbance that would diminish the function of a particular land use (Criterion LU2)

Impact LU-2: Construction activities would temporarily disrupt, displace, or preclude existing residential land uses.

Some construction-related activities for the Alternative 3 transmission line would require the temporary use of lands for purposes other than their existing uses (i.e., staging areas, access roads, and pulling, tensioning, and splicing sites). The use of these areas could temporarily restrict access to, or the use of, lands that surround them as well. Construction would additionally cause temporary disturbances due to site-specific access limitations and parking restrictions, increased traffic along construction routes and detour routes, increased dust generation and noise, and changes in the overall visual character of an area due to the presence of construction-related equipment, personnel, and associated activities.

Staging areas would be selected on the basis of accessibility to construction locations and proximity to transmission line and substation access roads. Temporary disturbance associated with staging are identified in Table 253 of Chapter 2. The number of sites used for pulling/tensioning/splicing of conductor wire would vary by route length and specific construction-related needs.

Construction of the Alternative 3 transmission line would require the improvement of some existing access and spur roads to accommodate construction-related heavy equipment; the construction of some new access and spur roads would additionally be needed. Table 2-4 of Chapter 2 provide the estimated temporary and permanent land disturbance acreages associated with these features. The estimated total construction-related temporary disturbance of land for the Alternative 3 transmission line ranges between 512 to 520 acres (Table 2-11).

Project construction activities would temporarily disrupt existing residential land uses and residents. Residential uses along or near the Alternative 3 transmission line include the cities of Lancaster and Palmdale as well as the unincorporated communities of Quartz Hill, Leona Valley, Agua Dulce, Del Sur Ranch, Joshua Ranch, Ritter Ranch and City Ranch (Anaverde). These residents would be subjected to increased noise levels and air quality emissions for the duration of construction. Construction would additionally cause temporary disturbances due to site-specific access limitations and parking restrictions, and increased traffic and congestion along construction and detour routes.

Construction-related impacts could also cause direct effects on residential land uses within approximately 1,000 feet of either side of a given ROW, or within approximately 1,000 feet of staging areas, substation sites, and new and improved access and spur roads due to the presence of construction crews, heavy equipment operation, and associated crew, equipment, and material access from these sites. Residences within 1,000 feet of construction could be temporarily disturbed by these activities.

Indirect effects could also occur at distances greater than 1,000 feet from construction sites due to the placement of temporary access roads, which could cause limited access to some properties, and the need for construction-related detours through neighborhoods which are not directly affected by construction activities. Although these disturbances would be temporary in nature, restrictions and preclusions of, and inconveniences to, the daily routines and activities of local residences due to construction may be substantial if not managed and residents kept informed.

Due to the proximity of some residential uses to construction-related activities, in conjunction with the intensity of the workforce and equipment needed and the duration of construction itself, the impacts to residential uses would be considered adverse. This impact occurs to the greatest extent under the Alternative 3 transmission line, as this transmission line has the highest number of residences close to the proposed ROW.

Construction-related disruptions to residential land uses would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 3 transmission line to residential land uses would be adverse but less than significant.

CEQA Significance

Construction-related disruptions to residential land uses associated with Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be temporary in nature. With implementation of GP-34, GP-37, GP-50, and GP-59, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts to residential land uses would be adverse but less than significant.

Impact LU-3: Construction activities would temporarily disrupt, displace, or preclude existing non-residential land uses.

Construction of the Alternative 3 transmission line would require the use of non-residential lands for purposes other than their existing uses to accommodate transmission structure placement. Portions of the impact corridor are used for non-residential uses such as agriculture including livestock grazing and apiaries, resource management, and recreational purposes. Areas adjacent to the impact corridor are used for utilities (including access roads), as well as commercial and industrial facilities. Public, private, and military airports and air fields are also close to the Alternative 3 transmission line. In addition, the Alternative 3 transmission line would traverse USFS land use zones, and Places within the ANF. Although the desired condition and program emphasis for each Place do not specifically address transmission lines, construction of the Alternative 3 transmission line would occur within an existing designated utility corridor; consequently, construction of the Alternative 3 transmission line would not impact the Places that it would traverse.

Within the impact corridor, construction activities associated with transmission structure installation and removal sites, staging areas, and pulling, tensioning and splicing sites would displace or disrupt non-residential land uses. Access to these uses may be blocked or detoured, thus affecting the delivery and/or shipment of goods and services, as well as customer and employee ingress and egress. Additionally, site-specific operations would be impaired or prohibited at some locations due to the need to clear areas for construction equipment and materials. Following the completion of construction, site-specific uses may be compromised if affected areas are not restored to their pre-construction condition.

Construction within about 1,000 feet of either side of (including outside of) the Alternative 3 transmission line ROW would also result in the same types of effects as described above (Impact LU-2) due to site-specific tower removal, assembly and installation, and pulling, tensioning and splicing activities, the need for temporary access roads, road detours and closures, and primary and secondary staging areas. Although the degree of these indirect effects outside of the ROW would not be expected to be as pronounced as within the ROW itself, impacts to non-residential uses close to construction zones could still be adverse at a site-specific level.

Public and private airports are also close to, but over one-half mile from, the Alternative 3 transmission line (see Appendix F, Table F-16 of this Final EIS/EIR). Transmission structure installation activities, however, could temporarily affect aircraft movement within the vicinity of transmission structure pad locations due to their height. Final transmission structure heights would range between 110 feet and 195 feet. Additionally, the construction of transmission structures within the ANF could temporarily affect aircraft movement, as well as those land uses (both non-residential and residential) that are close to transmission structure sites; these effects may also be adverse at a site-specific scale.

As presented in Appendix D, Regulatory Framework (Section D.5 Land Use), FAR Title 14, Part 77 establishes the standards for determining obstructions in navigable airspace, including height limitations on structures taller than 200 feet or within 20,000 feet (3.79 miles) of an airport. Before construction, LADWP would consult with the FAA and ensure the filing of all forms and associated specifications per the requirements of FAR Title 14, Part 77. In addition, before the start of construction, LADWP would consult with the Los Angeles County Sheriff Department and the USFS (including GP-21) to ensure that construction, operation, maintenance, and decommissioning of Alternative 3 would not conflict with local aircraft operations or associated safety provisions.

With implementation of GP-21, GP-34, GP-37, and GP-50, in conjunction with implementation of pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.2.8 (Traffic and Transportation), construction-related impacts of the Alternative 3 transmission line to residential land uses would be adverse, but less than significant.

CEQA Significance

With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change), and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses associated with Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be adverse, but less than significant.

Impact LU-4: Operation and maintenance would cause long-term disruption of existing and planned residential land uses. The Alternative 3 transmission line would require new ROW. A total of seven single-family residences would be traversed by the Alternative 3 transmission line. Since a residence would not be allowed within the ROW, a significant impact would result. These residences could not be avoided by re-routing around the residences. As a result, the impact would remain significant. In addition, a section of the Alternative 3 transmission line (mileposts 45.2 to 46.7) was moved to avoid removal of two residences near 90th Street West and West Avenue L. The ROW would also partially fall within the boundaries of the Mojave, Soledad Mountain- Elephant Butte, and Willow Springs Specific Plan areas. The Alternative 3 transmission line would also traverse or lie adjacent to portions of undeveloped residential subdivisions. Based upon the estimates provided in Chapter 2, Table 2-11, The Alternative 3 transmission line would result in the permanent disturbance of between 91 to 135 acres of land.

Alternative 3 may result in take of private property including ancillary structure(s) through use of eminent domain or removal of unauthorized encroachments. In some instances, the LADWP could instead seek an easement on the property, rather than ownership, in fee. Additionally, Alternative 3 has the potential to result in take of homes through eminent domain. The use of eminent domain would only occur if negotiations between LADWP and individual property owners do not result in agreement by both parties. This process would be conducted according to California State law. The full extent of this impact is unknown at this time, as negotiations with property owners would not occur until after decisions on the Project route are made by the lead agencies, through the CEQA/NEPA process. The potential for this impact is highest under Alternative 3, as it is the only alternative with potential to take homes through eminent domain.

CEQA Significance

The removal of seven existing single-family residences cannot be avoided. As a result, the impact would remain significant. LADWP would purchase in full or otherwise acquire the necessary leases or easements for construction, operation and maintenance of these ROWs. As such, LADWP's required acquisition of the rights to construct and operate the Project with affected private property owners, in conjunction with its acquisition of the regulatory approvals required for new ROWs and substation sites, would inherently allow for the preclusion of future residential development. When LADWP could not resolve facility locations in discussions with property owners (e.g., creating the least potential impact to the property, mutual acceptance), LADWP would pay just compensation to the property owners based on the facility locations identified by LADWP. Alternative 3's preclusion of, and incompatibility with, future and future residential land uses within the proposed new 230 kV double-circuit transmission line ROW, and adjacent to existing ROWs (BR-RIN 230 kV transmission line and Castaic-Olive 230 kV transmission line), would be considered adverse but less than significant.

Impact LU-5: Operation and maintenance would cause long-term disruption of existing and planned non-residential land uses.

The Alternative 3 transmission line would traverse or fall within one-half mile of lands used for a variety of purposes other than residential, such as agriculture including livestock grazing, resource management, and recreation.

Within the ANF, the Alternative 3 transmission line would be within a USFS-designated utility corridor. The Alternative 3 transmission line would be either within a designated utility corridor or adjacent to existing utility ROWs. While new transmission structures along these ROWs would increase the bulk of the existing transmission line corridors, they would not significantly change the character or use of the areas surrounding these ROWs. The majority of the Alternative 3 transmission line consists of existing and planned residential, agricultural and open space (resource management) uses. Potential impacts associated with existing and planned residential uses are addressed above, under Impact LU-4. Placement of the Alternative 3 transmission line in open space and resource management areas may limit activities at some transmission structure-specific locations; however, these limitations would not be anticipated to substantially affect existing and planned non-residential land uses.

Non-residential lands within one-half mile of the Alternative 3 transmission line fall under the jurisdiction of federal, State, and local agencies including the BLM, USFS, DoD, and California Department of Parks and Recreation. In addition, several airports, heliports and landing strips regulated by the FAA and Airport Land Use Commissions (or their respective alternative processes) would be within 3.79 miles of some elements of the Project. The Alternative 3 transmission line would also traverse or be near local (county and city) jurisdictions. However, no significant preclusions of, or restrictions to, the management and uses of these lands would be anticipated with implementation of GP-50.

CEQA Significance

No significant preclusions of, or restrictions to, the management and uses of these lands associated with Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be anticipated, due to implementation of GP-50.

Conflict with military operations (Criterion LU3)

Impact LU-6: Operation would conflict with military operations.

The Alternative 3 transmission line would be within a portion of the 20,000-square-mile R-2508 military range complex. The R-2508 Complex includes all the airspace and associated land presently used and managed by three principal military activities in the Upper Mojave Desert region: Air Force Flight Test Center, Edwards Air Force Base; National Training Center, Fort Irwin; and Naval Air Warfare Center Weapons Division, China Lake. LADWP would provide a complete copy of the Project's application, including the location of the entire transmission line alignment and the heights of structures, to the Department of Defense.

CEQA Significance

Review by the Department of Defense would ensure that Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not conflict with military operations.

Impact LU-7: Construction, operation or maintenance of additional energy transport projects within Section 368 energy corridor.

It should be noted that future energy transport projects could be within this designated (Section 368) corridor. Subsequent authorization of project-specific ROWs may affect land use if a future ROW conflicts with existing residential, commercial, recreational, military, or other uses of the area. Short-term impacts to land use within and adjacent to the designated corridor could occur as a result of vegetation removal, road construction, noise, and fugitive dust and air emissions generated during construction activities. Degradation in the quality of the visual landscape for recreational users as well as changes in accessibility could also occur in some areas. There would be potential for take of both property and homes through eminent domain if the proponents of future projects were unable to negotiate agreements with private landowners. Clearing of a ROW would likely result in the permanent loss of vegetation within and possibly adjacent to the ROW. Residences, commercial uses, recreational activities, livestock grazing, and wildlife habitat could experience short-term disturbance during construction activities. Following completion of the project, the project and its ROW generally would not preclude resumption of many of those activities. The nature, magnitude, and extent of the land use impacts would depend directly on the existing land use in the project area and its compatibility with the nature of the proposed ROW and its associated project.

The designation of Section 368 energy corridors does not include project authorization. Subsequent analyses of project-specific environmental impacts would be conducted during project-specific NEPA analyses for projects seeking ROW authorization within a Section 368 energy corridor. Projects crossing State and private lands would be subject on those lands to applicable State and local environmental regulations, as well as any stipulations required by the applicable State and/or local authorizing agency.

Summary and Comparison of Alternatives

Table 4.2.3-5 provides a summary comparison of impacts related to land use for the new 230 kV double-circuit transmission line for each action Alternative and the No Action Alternative. Because the impacts of the Project components common to all action Alternatives would be the same for each action Alternative, their impacts have not been included in the comparison table.

TABLE 4.2.3-5. SUMMARY COMPARISON OF LAND USE IMPACTS

Environmental Issues/Concerns	Alternative 1	Alternative 2 (Proposed Action)	Alternative 2a	Alternative 3	No Action Alternative
Ground Disturbance					
New Access Roads (miles)	7.3	0.1	0.1	0.6	Under the No Action Alternative, impacts to land use would not occur.
Temporary (acres)	576 -599	398 – 399	405 – 409	512 – 520	Same as above.
Permanent (acres)	120 - 199	57 - 70	59 - 75	91 - 135	Same as above.
Helicopter Construction (miles)	8.4	0.0	3.6	0.0	Same as above.
Acquisition of Residential Structures (#)	0	0	0	7	Same as above.
Residences within 1,000 feet of Centerline	106	156	70	242	Same as above.
Recorded/Approved Residential Subdivisions Crossed by Centerline (miles)	9.7	8.4	8.4	9.3	Same as above.
USFS Back Country Non-Motorized Land Use Zone Crossed (miles)	2.4	0.0	1.0	0.0	Same as above.

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4.2.4 AGRICULTURAL RESOURCES

Introduction

This section provides an overview to explain how impacts are defined, identified, and assessed for agricultural resources. It presents the significance criteria on which impact determinations are based, recommends measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) adverse impacts anticipated from Project construction, operation, maintenance, and decommissioning relevant to agricultural resources, and defines and lists the overall impacts identified for the Proposed Action and Alternatives.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to agricultural resources are addressed in this analysis:

- The Proposed Action and Alternatives would impact agricultural farms.

Impact Assessment Methodology

For a particular agricultural resource, only the impact within the assumed impact corridor (500 feet in width) of the Proposed Action and Alternatives was assessed. For purposes of this analysis, a construction-related (temporary) impact to agricultural resources would occur if access to an agricultural resource would be temporarily disrupted or if the nature, condition, or operation of agricultural land would be temporarily altered during construction. The temporary land area requirements expected include the work areas around each structure site, work areas for installing conductors, guard structures at crossings, storage and staging yards, access roads, substation expansion, and new substation construction. Agricultural lands temporarily disturbed during construction would be returned to as close to pre-construction conditions as possible following completion of construction activities.

An operational (permanent) impact would occur if access to an agricultural land use would be permanently disrupted or if the nature, condition, or operation of agricultural land would be permanently altered as a result of Project operation. Permanent land disturbance areas would include the structure sites, construction of new access and spur roads, and the removal of non-compatible land uses along the ROW for electric system maintenance, safety and reliability purposes.

Maintenance impacts refer to the effects resulting from the types of activities necessary for long-term maintenance of the proposed transmission lines and substations, such as routine inspections and repairs along the ROWs, operation of substations, and inspection and repair of permanent access roads.

The potential impacts associated with the Project are evaluated on a qualitative and quantitative basis through a comparison of the anticipated Project effects on agricultural activities. A change in the land use would normally be determined to be significant if the effects described in the thresholds of significance would occur. The evaluation of Project impacts is based on professional judgment, previous environmental impact assessments, analysis of local agency agricultural resources polices, and the significance criteria established by Appendix G of the State CEQA Guidelines.

Significance Criteria

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria have been identified and utilized to make these significance conclusions. Impacts of the Proposed Action or Alternatives would be considered significant and would require mitigation if they would:

- Criterion AG1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation (DOC) and the USDA Natural Resources Conservation Service, to non-agricultural use.

  The conversion of Farmland would be considered significant if more than ten acres is converted to non-agricultural use. This threshold is used because it is the minimum acreage requirement for individual parcels to enter into Williamson Act contracts (California Government Code, Section 51222) and represent parcels or areas of agricultural land large enough to sustain agricultural uses. Ten acres is the minimum mapping unit on the DOC Farmland Mapping and Monitoring Program (FMMP) Important Farmland maps. The minimum mapping unit indicates the spatial scale of the maps and is the smallest unit or feature represented on the maps, with smaller than 10-acre features being absorbed into the surrounding classifications.

- Criterion AG2: Involve other changes in the existing environment, which, due to their location or nature, could result in interference with agricultural operations.

- Criterion AG3: Conflict with a Williamson Act contract.

Significance conclusions for individual impacts are not required by NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Mitigation Planning

Mitigation measures are designed to reduce impacts associated with the Proposed Action. Specific mitigation measures are recommended when it is determined that Project design and/or GPs do not fully mitigate an impact. General Practices (GPs) are intended to minimize the potential for significant impacts associated with the Proposed Action and Alternatives and are listed in Chapter 2. The agriculture analysis concludes that implementation of the Proposed Action would not result in potentially significant impacts that would require specific mitigation.

Summary of Impact Analysis Results

This section presents a detailed discussion of impacts and mitigation measures for the Proposed Action and Alternatives. Table 4.2.4-1 summarizes impacts to agricultural resources based on the significance criteria discussed above.

TABLE 4.2.4-1. IMPACTS IDENTIFIED – AGRICULTURE

Impact Number	Description
AG-1	Construction activities would temporarily preclude the agricultural use of Farmland
AG-2	Operation would permanently convert Farmland to non-agricultural use
AG-3	Construction activities would interfere with agricultural operations
AG-4	Operation would interfere with agricultural operations
AG-5	Conflict with Williamson Act contract lands

No Action Alternative

Under the No Action Alternative, neither the Proposed Action or an Alternative would be implemented. Consequently, associated impacts to agricultural resources would not occur. However, in the absence of either the Proposed Action or one of its Alternatives, the purpose and need for power transmission capabilities would not be met.

Environmental conditions in the agricultural resources study area would be expected to change or evolve over time, regardless of whether the Proposed Action or an Alternative (including the No Action Alternative) is implemented. Therefore, the regional setting and baseline conditions (Chapter 3) would not remain static. Agricultural resources in the study area, as discussed below, would be expected to change under the No Action Alternative.

The cities of Santa Clarita, Palmdale and Lancaster are rapidly developing urban areas which include large tracts of planned residential development. Under the No Action Alternative this region is expected to continue its rapid rate of urban and suburban development. Assuming that growth in these areas continues, lands that are currently used for agricultural production would be converted to non-agricultural uses. However, as all such development would require site-specific planning (e.g., the development of a Specific Plan, General Plan, or similar land use planning document) and environmental review before its implementation, it is assumed that potential impacts to agricultural resources would be identified and mitigated, as feasible and appropriate.

Under the No Action Alternative, existing transmission lines would continue to operate under their current conditions. Therefore, no new temporary or long-term impacts to agricultural land uses within or adjacent to their respective ROWs would occur. The No Action Alternative would result in no impacts to Agricultural Resources. In comparison to Alternatives 1, 2, 2a and 3, there would be fewer impacts to agricultural resources under this Alternative. Under this Alternative, there would be no construction of the proposed Haskell Canyon Switching Station and expansion of the Barren Ridge Switching Station.

In addition, a portion of the Proposed Action or its Alternatives would be within the ANF and on BLM-administered public land. The majority of these lands are made up of undeveloped lands used for recreation and natural resource management, and the area is largely void of agricultural resources.

Under the No Action Alternative, no construction-related activities that would temporarily preclude or restrict existing uses of USFS or BLM-administered lands, or private lands would occur, including short-term disturbances to agricultural and forestry uses.

Under the No Action Alternative, the addition of a new 230 kV circuit between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant would not occur. Agricultural resources are not present in this area. Consequently, no construction-related activities that could temporarily preclude, restrict, or otherwise disturb agricultural resources in this area would occur.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

No DOC Farmlands, Active Agricultural Operations, or Williamson Act lands would be impacted by the new 230 kV circuit between the Haskell Canyon Switching Station and Castaic Power Plant. As such, construction or operational activities would not temporarily or permanently impact agricultural resources and no mitigation would be required.

Reconductoring of BR-RIN Transmission Line

During operation, reconductoring of the BR-RIN transmission line would not disrupt these established land uses because it would not result in a substantial change to the existing use of the ROW. However, construction activities would have the potential to disrupt agricultural resources along the transmission corridor for short periods. For example, temporary staging areas outside the ROW could temporarily affect agricultural resources by disrupting access to properties adjacent to the ROW or precluding some activities close to the ROW. These instances are expected to be short-term and infrequent because most, if not all, of the construction activity would take place within the existing corridor. Due to their temporary and intermittent nature, and implementation of GP-34 (limit construction activities to ROW) and GP-37 if required (surface restoration), impacts resulting from disruptions to agricultural resources would be adverse but less than significant.

New Haskell Canyon Switching Station

No DOC Farmlands, Active Agricultural Operations, or Williamson Act lands would be impacted by the new Haskell Canyon Switching Station site. As such, construction or operational activities would not temporarily or permanently impact Agricultural Resources and no mitigation would be required.

Expansion of Barren Ridge Switching Station

No DOC Farmlands, Active Agricultural Operations, or Williamson Act lands would be impacted by expansion of the Barren Ridge Switching Station site. Thus, improvements to the Barren Ridge Switching Station would not create construction or operational impacts that would temporarily or permanently impact agricultural resources and no mitigation would be required.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

Convert Farmland to non-agricultural use (Criterion AG1)

The Alternative 1 transmission line would not be on Farmland (Prime Farmland, Unique Farmland, or Farmland of Statewide Importance). Consequently, the Alternative 1 transmission line would have no direct or indirect impacts on Farmland.

Interfere with agricultural operations (Criterion AG2)

Impact AG-3: Construction activities would interfere with agricultural operations.

The Alternative 1 transmission line would be constructed across 2.8 miles of agricultural land. Construction activities across these agricultural lands would consist of construction of the 230 kV transmission line. These construction activities could conflict with existing agricultural operations.

Clearing and grading could be required to build spur roads associated with new transmission line structures. The presence and use of heavy equipment, including road graders, dozers, excavators, and trucks, needed to construct the new spur roads could interfere with agricultural operations by damaging crops or soil, impeding access to certain fields or plots of land, obstructing farm vehicles, or potentially disrupting drainage and irrigation systems. These events could result in the temporary reduction of agricultural productivity in the area. Similar to the construction of spur roads, the construction of the 230 kV transmission line, including structure installation and wire stringing, would also interfere with agricultural operations. These interferences could result in a temporary decrease in agricultural productivity, but implementation of VIS-17 would locate transmission structures minimizing impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural Operations would be minimized such that impacts would be considered adverse, but not significant.

Implementation of VIS-17 and GP-37 would avoid and minimize impacts to agricultural operations for the Alternative 1 transmission line such that impacts would be adverse, but would be reduced to a level that is not significant.

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction in locations minimizing the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Impact AG-4: Operation would interfere with agricultural operations.

The Alternative 1 transmission line would cross 2.8 miles of agricultural land. Operation and maintenance of the Alternative 1 transmission line would result in the presence of a 230 kV transmission line, including transmission line structures and wire, and spur roads. The presence of these roads and structures would interfere with agricultural operations along the transmission line route.

The presence of spur roads across agricultural operations could divide farm properties, which could create an obstacle to farming that impedes access to certain fields or plots, and creates irregularly shaped fields in which it would be difficult to maneuver farm equipment. New roadways could also disrupt drainage and irrigation systems, affect the efficacy of windbreaks, fragment farms, and allow for the introduction of invasive weeds within and around disturbed areas. These interferences could also permanently decrease agricultural operations productivity. Similar to the presence of new spur roads, the 230 kV transmission line could also interfere with agricultural operations, and could permanently decrease agricultural productivity. Implementation of VIS-17-1 would locate transmission structures minimizing impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural Operations from the Alternative 1 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and minimize the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Conflict with a Williamson Act Contract (Criterion AG5)

Impact AG-5 Conflict with Williamson Act contract lands.

The Alternative 1 transmission line would cross 1.5 miles of land under Williamson Act contract in Kern County. The land is currently not under active cultivation. Construction activities across this land would include the construction, assembly and installation of a 230 kV transmission line, installation of structure foundations, extension of spur roads, and the stringing of conductor and overhead ground wire. Construction in this area would require the use of graders, dozers, excavators, cranes, and various trucks for clearing and grading, tower assembly and installation, and stringing and pulling.

Although stringing and pulling disturbed areas would be restored following the completion of construction activities, structure footings and foundations, and access and spur roads would be permanent disturbances to lands under Williamson Act contract.

Although the Alternative 1 transmission line would result in both temporary and permanent conversion of lands under Williamson Act contracts, because the Project would be an electrical infrastructure project, these components are considered allowable uses under Williamson Act contracts. Consequently, there would be no conflict with Williamson Act contracts.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Convert Farmland to non-agricultural use (Criterion AG1)

Impact AG-1: Construction activities would temporarily preclude the agricultural use of Farmland.

The Alternative 2 transmission line would be constructed across 4.5 miles of Farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance). Construction activities across these lands would include the construction, assembly, and installation of a 230 kV transmission line, installation of structure foundations, extension of spur roads, and the stringing of conductor and overhead ground wire. These activities would require the use of heavy equipment, such as graders, dozers, excavators, cranes, and various trucks for clearing and grading, tower assembly and installation, and stringing and pulling. Temporary disturbance of Farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) from these activities would amount to 14 acres.

Implementation of VIS-17-1 would locate transmission structures minimizing impacts to Farmland, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Farmland from the Alternative 2 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

As the conversion of Farmland would be greater than the 10-acre threshold described in the significance criteria, these impacts would be considered significant. Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to Farmland, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to Farmland would be avoided and minimized such that impacts would be considered adverse, but not significant.

Impact AG-2: Operation would permanently convert Farmland to non-agricultural use.

The Alternative 2 transmission line would traverse 4.5 miles of Farmland (Prime Farmland and Farmland of Statewide Importance) and would include access and spur roads, transmission structures, and stringing and pulling sites. While the stringing and pulling sites would be restored following the completion of construction activities, structure footings and foundations and access and spur roads would represent a permanent disturbance to this Farmland of 1.7 acres.

While the Alternative 2 transmission line would have Farmland temporarily converted to a non-agricultural use as described under Impact AG-1, only 1.7 acres of Farmland would be permanently converted to a non-agricultural use. As this total area would be less than the minimum area necessary for sustainable agriculture and less than the minimum DOC mapping unit, the permanent conversion of Farmland for the Alternative 2 transmission line to a non-agricultural use would be considered adverse, but not significant.

CEQA Significance

Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would temporarily convert Farmland greater than the 10-acre threshold described in the significance criteria and under Impact AG-1. However, only 1.7 acres of Farmland would be permanently converted to non-agricultural uses. As this total area would be less than the minimum area necessary for sustainable agriculture and less than the minimum DOC mapping unit, the permanent conversion of Farmland under Alternative 2 to non-agricultural uses would be considered adverse, but not significant.

Interfere with agricultural operations (Criterion AG2)

Impact AG-3: Construction activities would interfere with agricultural operations.

The Alternative 2 transmission line would be constructed across 4.7 miles of agricultural land. Construction activities across agricultural lands would consist of construction of the 230 kV transmission line. These construction activities could conflict with existing agricultural operations.

Clearing and grading could be required to build spur roads associated with new transmission line structures. The presence and use of heavy equipment, including road graders, dozers, excavators, and trucks, needed to construct the new spur roads could interfere with agricultural operations by damaging crops or soil, impeding access to certain fields or plots of land, obstructing farm vehicles, or potentially disrupting drainage and irrigation systems. These events could result in the temporary reduction of agricultural productivity in the area. Similar to the construction of spur roads, the construction of the 230 kV transmission line, including structure installation and wire stringing, would also interfere with agricultural operations. These interferences could result in a temporary decrease in agricultural productivity. Implementation of VIS-17 would locate transmission structures and minimize impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural Operations from the Alternative 2 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Impact AG-4: Operation would interfere with agricultural operations.

The Alternative 2 transmission line would be constructed across 4.7 miles of agricultural land. Operation and maintenance of the Alternative 2 transmission line would result in the presence of a 230 kV transmission line, including transmission line structures and wire, and spur roads. The presence of these roads and structures could interfere with agricultural operations along the transmission line route.

The presence of spur roads across agricultural operations could divide farm properties, which could create an obstacle to farming that impedes access to certain fields or plots, and creates irregularly shaped fields in which it would be difficult to maneuver farm equipment. New roadways could also disrupt drainage and irrigation systems, affect the efficacy of windbreaks, fragment farms, and allow for the introduction of invasive weeds within and around disturbed areas. These interferences could also permanently decrease agricultural operations productivity. Similar to the presence of new spur roads, the 230 kV transmission line could also interfere with agricultural operations, and could permanently decrease agricultural productivity. As such, implementation of VIS-17 would locate transmission structures minimizing impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural

Operations from the Alternative 2 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Conflict with a Williamson Act Contract (Criterion AG3)

No lands under Williamson Act contract exist along Alternative 2. Consequently, the Proposed Action would not conflict with any Williamson Act contracts and no impact would occur.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. . Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. Agricultural Resource impacts associated with Alternative 2a would be the same as described for Alternative 2.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Convert Farmland to non-agricultural use (Criterion AG1)

Impact AG-1: Construction activities would temporarily preclude the agricultural use of Farmland.

The Alternative 3 transmission line would be constructed across 5.8 miles of Farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance). Construction activities across these lands would include the construction, assembly, and installation of a 230 kV transmission line, installation of structure foundations, extension of spur roads, and the stringing of conductor and overhead ground wire. These activities would require the use of heavy equipment, such as graders, dozers, excavators, cranes, and various trucks for clearing and grading, tower assembly and installation, and stringing and pulling. Temporary disturbance of Farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) from these activities would amount to 18.2 acres.

Implementation of VIS-17 would locate transmission structures minimizing impacts to Farmland, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Farmland from the Alternative 3 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

As the conversion of Farmland would be greater than the 10-acre threshold described in the significance criteria, these impacts would be considered significant. Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to Farmland, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these GPs, impacts to Farmland would be avoided and minimized such that impacts would be considered adverse, but not significant.

Impact AG-2: Operation would permanently convert Farmland to non-agricultural use.

As described above for Impact AG-1, the Alternative 3 transmission line would traverse 5.8 miles of Farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) and would include access and spur roads, transmission structures, and stringing and pulling sites. While the stringing and pulling sites would be restored following the completion of construction activities, structure footings and foundations and access and spur roads would represent a permanent disturbance to this Farmland of 2.2 acres.

While the Alternative 3 transmission line would have Farmland temporarily converted to a non-agricultural use as described under Impact AG-1, only 2.2 acres of Farmland would be permanently converted to a non-agricultural use. As this total area would be less than the minimum area necessary for sustainable agriculture and less than the minimum DOC mapping unit, the permanent conversion of Farmland from the Alternative 3 transmission line to a non-agricultural use would be considered adverse, but not significant.

CEQA Significance

Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would temporarily convert Farmland greater than the 10-acre threshold described in the significance criteria and under Impact AG-1. However, only 2.2 acres of Farmland would be permanently converted to non-agricultural uses. As this total area would be less than the minimum area necessary for sustainable agriculture and less than the minimum DOC mapping unit, the permanent conversion of Farmland under Alternative 3 to non-agricultural uses would be considered adverse, but not significant.

Interfere with agricultural operations (Criterion AG2)

Impact AG-3: Construction activities would interfere with agricultural operations.

The Alternative 3 transmission line would be constructed across 4.3 miles of agricultural land. Construction activities across these agricultural lands would consist of construction of the 230 kV transmission line. These construction activities could conflict with existing agricultural operations.

Clearing and grading could be required to build spur roads associated with new transmission line structures. The presence and use of heavy equipment, including road graders, dozers, excavators, and trucks, needed to construct the new spur roads could interfere with agricultural operations by damaging crops or soil, impeding access to certain fields or plots of land, obstructing farm vehicles, or potentially disrupting drainage and irrigation systems. These events could result in the temporary reduction of agricultural productivity in the area. Similar to the construction of spur roads, the construction of the 230 kV transmission line, including structure installation and wire stringing, would also interfere with agricultural operations. These interferences could result in a temporary decrease in agricultural productivity. As such, implementation of VIS-17 would locate transmission structures minimizing impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural Operations from the Alternative 3 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Impact AG-4: Operation would interfere with agricultural operations.

The Alternative 3 transmission line would cross 4.3 miles of agricultural land. Operation and maintenance of the Alternative 3 transmission line would result in the presence of a 230 kV transmission line, including transmission line structures and wire, and spur roads. The presence of these roads and structures would interfere with agricultural operations along the transmission line route.

The presence of spur roads across agricultural operations could divide farm properties, which could create an obstacle to farming that impedes access to certain fields or plots, and creates irregularly shaped fields in which it would be difficult to maneuver farm equipment. New roadways could also disrupt drainage and irrigation systems, affect the efficacy of windbreaks, fragment farms, and allow for the introduction of invasive weeds within and around disturbed areas. These interferences could also permanently decrease agricultural operations productivity. Similar to the presence of new spur roads, the 230 kV transmission line could also interfere with agricultural operations, and could permanently decrease agricultural productivity. Implementation of VIS-17 would locate transmission structures minimizing impacts to Active Agricultural Operations, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Impacts to Active Agricultural Operations from the Alternative 3 transmission line would be minimized such that impacts would be considered adverse, but not significant.

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, VIS-17 would be implemented to site construction and would minimize the impacts to agricultural lands, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. With the implementation of these measures, impacts to agricultural operations would be avoided and minimized such that impacts would be considered adverse, but not significant.

Conflict with a Williamson Act Contract (Criterion AG3)

No lands under Williamson Act contract exist along Alternative 3. Consequently, the Alternative would not conflict with any Williamson Act contracts and no impact would occur.

Summary and Comparison of Alternatives

Table 4.2.4-2 provides an overview of impacts to agricultural resources for each action Alternative. Because the No Action Alternative does not include impacts to agricultural resources, the No Action Alternative has not been included in the table.

TABLE 4.2.4-2. AGRICULTURAL RESOURCES - DISTURBANCE SUMMARY BY ACTION ALTERNATIVE (ACRES)

	DOC Farmlands						
Alt	**Prime Farmland**	**Unique Farmland**	**Farmland of Statewide Importance**	**Total DOC Farmlands**	**Total Active Ag Operations**	**Total Williamson Act Lands**	**Total Ag Resources***
1t	-	-	-	-	11.9	4.6	16.5
1p	-	-	-	-	4.8	2.6	7.4
2t	5.5	1.8	6.7	14.0	18.9	-	46.9
2p	0.7	0.2	0.8	1.7	2.3	-	5.7
2at	5.5	1.8	6.7	14.0	18.9	-	46.9
2ap	0.7	0.2	0.8	1.7	2.3	-	5.7
3t	7.3	2.5	8.4	18.2	17.3	-	53.7
3p	0.9	0.3	1.0	2.2	2.1	-	6.5

* Lands identified as agricultural resources may have multiple characterizations such that land may be designated DOC Farmland and/or land under Active Agricultural Operation and/or land under a Williamson Act contract.

t – temporary disturbance p - permanent disturbance

4.2.5 RECREATION

Introduction

This section provides an overview to explain how impacts to recreational resources are defined, identified, and assessed. It presents the significance criteria on which impact determinations are based, recommends specific measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) adverse impacts anticipated from Project construction, operation, maintenance, and decommissioning relevant to recreation, and defines and lists the overall impacts identified for the Proposed Action and Alternatives.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to recreational and Wilderness resources are addressed in this analysis:

- Potential for adverse impacts to heavily used recreation areas and wildlife corridors and preservation of open space. Some examples of the recreational facilities and trails in the Project area are: Angeles National Forest, BLM-managed lands, State Parks, Antelope Valley California Poppy Reserve, and Pacific Crest Trail (PCT)
- Expansion of transmission line rights-of-way that may impact current and future projects and developments in the project area
- Potential for increased illegal off-highway vehicle use, and other unauthorized access, through the forest road systems due to increased access and improvements to existing roads

- Impacts to Eligible Wild and Scenic River Corridor that may be impacted by the Proposed Action and Alternatives

Impact Assessment Methodology

The potential impacts associated with the Project are evaluated on a qualitative and quantitative basis through a comparison of the anticipated Project effects on recreation. A change in recreation would normally be determined to be significant if the effects described in the thresholds of significance would occur. The evaluation of Project impacts is based on professional judgment, previous environmental impact assessments, analysis of local agency recreation polices, and the significance criteria established by Appendix G of the State CEQA Guidelines.

Significance Criteria

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria have been identified and utilized to make these significance conclusions. Impacts of the Proposed Action or Alternatives would be considered significant and would require mitigation if they would:

- Criterion R1: Directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas or wilderness areas.
- Criterion R2: Substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities or wilderness areas.

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Mitigation Planning

Mitigation measures are designed to reduce impacts associated with the Project. Specific mitigation measures are recommended when it is determined that Project design and/or General Practices (GPs) would not fully mitigate an impact. GPs are intended to minimize the potential for significant impacts associated with the Proposed Action and Alternatives and are listed in Chapter 2. Mitigation measures were applied to recreation, on a case-by-case basis, where appropriate (Table 4.2.5-1).

TABLE 4.2.5-1. MITIGATION MEASURES – RECREATION

Mitigation Measure	Description
R-1a	**Coordinate construction schedule and maintenance activities with managing officer(s) for affected recreation areas.** LADWP shall develop a Project construction schedule and coordinate construction with the authorized officer(s) or the agencies of recreational areas affected by construction and maintenance activities, including but not limited to the following: BLM, USFS (ANF); California Department of Fish and Game (CDFG); Pacific Crest Trail Association (PCTA); California State Park and Recreation Commission; California Department of Parks and Recreation; Kern County Department of Parks and Recreation; Castaic Lake Water Agency (CLWA); Mountains Recreation & Conservation Authority (MRCA); and Los Angeles County Department of Parks and Recreation. Through coordination efforts with the agencies listed above, as well as any additional agencies that manage recreational resources which would be affected, and at the discretion of the authorized officer(s) responsible for management of the affected resource(s), LADWP shall ensure the following occurs, to the extent practical, unless otherwise approved by the affected agencies: • Construction and maintenance activities are scheduled to avoid heavy recreational use periods (including major holidays); • Staging areas for Project-related equipment, materials, and vehicles are in areas with the least possible effect on recreational activities and opportunities; • Timetables for the required period of usage of each staging area are developed and adhered to in coordination with affected resource agencies.
R-1b	**Identify and provide noticing of alternative recreation areas.** To the extent feasible, LADWP shall coordinate with the authorized recreation officer(s) or the agencies of all recreational areas affected by construction and maintenance activities, including but not limited to those listed under R-1a (Coordinate construction schedule and maintenance activities with managing officer[s] for affected recreation areas), the purpose of which is to accomplish the following: • Identify recreational areas (i.e., trails, parks, day-use areas) that would be closed during Project construction or maintenance activities; • To the extent feasible, identify alternative recreational areas for each resource that would be made unavailable to the public due to construction or maintenance activities; and • Post a public notice which identifies alternative recreational areas at USFS Ranger Stations within the ANF and at all recreational areas to be closed due to construction or maintenance activities.
R-1c	**Notification of temporary closure of Off-Highway Vehicle routes.** To the extent feasible, LADWP shall coordinate with the USFS (ANF) to identify OML 2 roads and other designated OHV routes which would be closed or otherwise made unavailable for use as a result of Project construction and maintenance activities. Included in this coordination effort, LADWP shall prepare a public notice which identifies all OML 2 roads and OHV routes to be closed as a result of construction and/or maintenance activities.
R-1d	**Notification of temporary closure and reroute of the Pacific Crest National Trail and/or other trails.** LADWP shall coordinate with the BLM, USFS, PCTA, and other agencies or organization(s) regarding temporary closure of trails that would occur during Project construction and maintenance activities. The following shall be included in this coordination effort to the extent feasible: • Identification of trail diversions to be applied at each point where trails would be temporarily closed to through-traffic as a result of construction and maintenance activities; and • Posting of public notices of temporary closures/diversions at locations determined to be appropriate by the agency or organization during construction and maintenance activities.

Mitigation Measure	Description
R-1e	**Compensate ANF for reductions in Adventure Pass sales due to recreation area closures associated with the Project**. Before Project construction in the ANF, LADWP shall coordinate with the USFS (ANF) to identify recreational resources on NFS lands in the ANF that would be temporarily closed as a direct result of Project construction. A resource is only considered to be closed directly as a result of Project construction if the resource is made entirely inaccessible to the public as a sole result of Project activities. LADWP shall coordinate with the USFS in reviewing financial records of the Adventure Pass program as well as recreational use data for the ANF. Upon completion of this review, LADWP and USFS shall come to agreement on recreation enhancement projects that will mitigate for the temporary loss of recreation facilities and reduction in revenue, comparable to the direct impacts of the Project. These projects shall be carried out by LADWP, according to plans and specifications of the USFS. Projects do not necessarily have to occur at sites directly impacted by the Project, but shall remain commensurate with the agreed-upon Project impacts.
R-2	**Avoid permanent upgrades to National Forest System roads.** LADWP shall avoid the permanent upgrade of NFS roads to the extent feasible as a result of Project construction or operation and maintenance activities unless otherwise approved by the USFS. Road upgrades that are required to accommodate construction of the Project shall be temporary in nature. Following construction of the Project, existing OML standards designated for temporarily improved roads shall be adhered to, thereby returning improved roads to existing maintenance practices, unless otherwise authorized by the USFS. As determined to be necessary through coordination between LADWP and the USFS and at the discretion of the USFS, LADWP shall develop a plan for returning improved NFS roads to existing conditions. LADWP shall implement the restrictions for road improvements and maintenance set forth in the Special Use or Road Use Authorization to be issued by the USFS for the Project.
R-3	**Installation of physical barriers.** LADWP would install physical barriers to prevent illegal OHV use to the extent feasible. LADWP will place and maintain barriers, such as boulders or rail fencing, during restoration of temporary work sites. In addition, LADWP would place gates at permanent LADWP roads where public use is not allowed.

Summary of Impact Analysis Results

Detailed discussions of each impact and the specific locations where each is identified are presented in the following sections. Table 4.2.5-2 summarizes impacts to recreation identified within the Project area, based on the significance criteria discussed above.

TABLE 4.2.5-2. IMPACTS IDENTIFIED – RECREATION

Impact Number	Description
R-1	Construction activities would restrict access to or disrupt activities within established recreational areas
R-2	Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas
R-3	Cause or contribute to degradation of the Pacific Crest National Scenic Trail
R-4	Contribute to degradation of Off-Highway Vehicle (OHV) routes or would result in a loss of recreational opportunity for OHV users
R-5	Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.

This section presents a detailed discussion of impacts and mitigation measures for the Proposed Action and Alternatives. Each section addresses both construction and operational impacts pursuant to the significance criteria established above. The discussion includes the significance of each impact, followed by mitigation measures, where appropriate.

No Action Alternative

Under the No Action Alternative, construction and operation of the Project would not occur. As such, associated impacts to recreation resources would not occur. However, in the absence of the

Proposed Action or an Alternative, the purpose and need for the power transmission capabilities that would be met by the Proposed Action or an Alternative would not be achieved.

Environmental conditions in the Project area are expected to naturally change or evolve over time and therefore, independently of the Proposed Action or an Alternative, the environmental setting and baseline conditions in the Project area (Chapter 3) would not remain static. If the No Action Alternative is implemented, recreation resources within the Project area would continue to naturally evolve over time, independently of the potential impacts associated with the Project. The following section describes how recreational resources in the Project area are expected to change under the No Action Alternative. Because the potential impacts of the Project would not occur under the No Action Alternative, the significance criteria described above are not used for analysis of the No Action Alternative.

In general, the extent and variety of recreational resources within the Project area are expected to increase. However, this increase is not dependent upon selection of the No Action Alternative and would likely occur independently of the Proposed Action or an Alternative. Currently planned residential developments in the Project area include proposals for recreational facilities and developed parks, including the Ritter Ranch Specific Plan area and the Anaverde Specific Plan area. It is reasonably foreseeable that construction of these developments would continue and that in the future, further development surrounding the cities of Lancaster and Palmdale would include additional recreational facilities for public use. The types of recreational resources that are reasonably foreseeable to be included as part of this ongoing development include facilities such as designated park areas and multi-use trails to connect residential areas with recreational facilities.

The Proposed Action and each of the Alternatives would traverse the Pacific Crest Trail (PCT) . Under the No Action Alternative, no crossing of the PCT would occur. The Project area includes the ANF. The ANF would continue to be managed by the USFS, regardless of the potential implementation of the Proposed Action or an Alternative, including the No Action Alternative. National Forest recreational resources affected by the Proposed Action or Alternatives would continue to exist under the management of the USFS for the purpose of public recreation and enjoyment.

The area south of the ANF is primarily urban in nature and includes a variety of developed resources, including parks and trails. For the most part, population growth in the cities and communities is expected to continue. As such, open space and recreational resources would continue to be in demand and as population growth continues, the demand for open space is also expected to increase. It is expected that the cities and communities would continue to utilize transmission corridors for the establishment of parks and trails.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

As opposed to the reconductoring of the BR-RIN transmission line described below, the addition of the new 230 kV circuit would include only stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant within the ROW. Impacts resulting from these stringing activities would be nearly identical to those described for the reconductoring component in type, but less severe because the new circuit would involve only restringing.

The new 230 kV circuit would not cause the permanent disruption of recreational facilities and would be consistent with applicable plans and policies. There would be a potential for the temporary disruption of recreational activities (primarily Castaic Lake State Recreation Area) during the stringing of lines over or adjacent to recreational areas, but these activities would be short-term and temporary. Impacts to recreation areas due to disruption would be considered adverse, but less than significant. Operation of the new 230 kV circuit would have no impact, as the additional circuit would not change the use or boundaries of the existing ROW.

Reconductoring of BR-RIN Transmission Line

Reconductoring of the existing BR-RIN would require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). The existing transmission line would be removed and used to pull the new conductor. Some of the transmission line structures would need to be modified or replaced, and/or foundations reinforced, to carry the additional weight of the new heavier conductor. Work would primarily remain within the existing ROW.

The Project would pass through or near recreational facilities, including the Castaic Lake Water Agency (CLWA) Conservatory Garden and Learning Center, Whitney Canyon Park, and Mountains Recreation and Conservation Authority (MRCA) property.

Transmission line structure removal and replacement construction would largely occur within the boundary of the existing ROW and outside the boundaries of recreational areas. Due to the expected location of construction mainly within an existing ROW, work on the transmission line structures would not be anticipated to substantially restrict access to or preclude the use of recreational facilities. Project construction activities could, however, restrict the use of access roads or otherwise temporarily block access to recreational resources near the ROW. These impacts would be considered potentially significant, but would be reduced to less than significant levels with the implementation of R-1a and R-1d.

Operation and maintenance of the Project would not restrict or preclude access to recreational resources. As such, the Project would not alter recreational resources as they currently exist.

New Haskell Canyon Switching Station

The proposed new switching station does not include recreational facilities, nor does it require the construction of new recreational facilities or the expansion of existing recreational facilities. Less than significant impacts associated with construction, operation and maintenance activities are expected.

Expansion of Barren Ridge Switching Station

There would be no effect on recreational facilities, and temporary restrictions that may affect dispersed recreation in the area are not considered a significant impact. Because of the degree of disturbance in the area, the appearance and disruption related to construction activities would not substantially affect recreational activities.

Operation and maintenance of the switching station would not affect recreational resources. Demand for and access to recreational resources would not be affected. The changes in appearance would not substantially alter recreational uses in the vicinity of the switching station. Maintenance traffic and activity may increase slightly at the existing Barren Ridge Switching Station. The potential impacts to recreation associated with construction and operation of the switching station are considered to be less than significant.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted. The direct and indirect effects of Alternative 1 are also summarized in Table 4.2.5-7 (Summary Comparison of Impacts – Recreation).

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Chapter 2, Figure 2-22, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites.

The use of helicopters for construction of the Alternative 1 double-circuit transmission line would minimize the potential for unmanaged recreational uses to occur, particularly OHV use, within the ANF.

Potential impacts of the Alternative 1 transmission line that could affect Developed Recreation resources and opportunities are presented below in Table 4.2.5-3. A detailed description of each impact related to recreation is presented in the text following the table.

TABLE 4.2.5-3. RECREATION IMPACTS APPLICABLE TO DEVELOPED RECREATION RESOURCES IN THE STUDY AREA

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
25.7-25.8	RCSD Parks System Master Plan Trail (L13)	R-1
25.9-26.1*	RCSD Parks System Master Plan Trail (L13)	R-1
26.7-27.6*	RCSD Parks System Master Plan Trail (Aqueduct Major M4)	R-1
28.1-29.0*	RCSD Parks System Master Plan Trail (Aqueduct Major M4)	R-1
34.4-37.4*	Pacific Crest Trail	R-1, R-2, R-4
44.3-46.5*	Pacific Crest Trail	R-1, R-2, R-4
58.3-58.6*	Forest Road 8N01 (OHV)	R-1,R-2, R-5
58.9-59.0	Forest Road 8N01 (OHV)	R-1, R-5
60.0-60.1	Forest Road 8N01 (OHV)	R-1, R-5
60.5-60.7*	Forest Road 8N01 (OHV)	R-1, R-2, R-5
61.2-61.3	Forest Road 8N01 (OHV)	R-1, R-5
62.8-62.9	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-5
62.9-63.6	Salt Creek IRA-1C	R-1, R-2
64.2-64.3	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-5
64.7-64.8	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-5
65.0-66.0	Salt Creek IRA-1B	R-1, R-2
66.1-66.2	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-5
66.3-66.4	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-5
68.3-68.5*	Forest Road 6N43	R-1
73.5-73.7*	Forest Road – Old Ridge Road 8N04 (OHV) – *currently under a temporary closure*	R-1, R-2, R-5
74.2-74.7*	LACRHT (Castaic Lake)	R-1
75.2-75.3	LACRHT (Castaic Lake)	R-1
75.3-76.3	Castaic Lake State Recreation Area; LACRHT (Castaic Lake)	R-1, R-2
76.3-76.7	Castaic Lake State Recreation Area	R-1, R-2
77.7-77.8	Castaic Lake State Recreation Area	R-1, R-2
77.8-77.9	Castaic Lake State Recreation Area; LACRHT (Castaic Lake)	R-1, R-2
77.9-78.1	Castaic Lake State Recreation Area	R-1, R-2
80.5-80.8*	LACRHT (Castaic Lake)	R-1
81.2-81.3	LACRHT (Castaic Lake)	R-1
82.4-82.5	Forest Road 5N29	R-1

*adjacent to and within impact zone
LACRHT - Los Angeles County Riding and Hiking Trail

Directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas (Criterion R1)

Impact R-1: Construction activities would restrict access to or disrupt activities within established recreational areas

Impact R-1 would occur for all Developed Recreation resources traversed by the proposed transmission line. Recreational resources that would be crossed would not necessarily be physically impacted by the presence of the overhead transmission line because, in most cases, the transmission line would span over the resource or area without ground impact. Although it is not anticipated that recreation resources that would be crossed by the Alternative 1 transmission line would be physically impacted, such resources and areas would be restricted from use during construction activities to protect the safety of public recreationists and to accommodate the transport and use of equipment and activities required to construct the new transmission line.

During construction activities, ground work would be required at each structure pad location, as well as along select roadways between the locations, as materials to build the structures would be transported by truck to the structure sites. As a result, resources and areas crossed by the transmission line would be temporarily closed during construction activities, for only as long as required to complete activities in a given location. Recreational areas close to the proposed route may also experience temporary use disruptions due to factors such as construction noise and the potential need to stage construction vehicles, equipment, or infrastructure.

In addition to developed recreation resources (PCT, RCSD Parks System Master Plan trails, LACRHT trails, Castaic Lake State Recreation Area, BLM routes, and USFS roads and trails), dispersed recreation opportunities would be affected due to temporary access restrictions during the construction period, as well as possible activity disruptions due to factors such as construction equipment staging and noise generated during the construction period. For example, recreational hunting permitted in Zone D-11 would be affected by Impact R-1 as a result of construction noise, traffic, and road closures, with road closures that would potentially restrict hunters from accessing certain areas of the ANF introducing the most noticeable effect. The Alternative 1 transmission line would cross the Salt Creek Inventoried Roadless Area, and construction sights and sounds would disrupt solitude and natural values of the area.

The degree to which dispersed recreation opportunities would be affected in the ANF would depend upon which ROS designation is affected by closures or restrictions related to the Alternative 1 transmission line construction. The type of recreational resource or opportunity available to the public largely depends upon the applicable ROS objective. In general, recreational activities within and adjacent to the Alternative 1 transmission line ROW would be temporarily suspended during construction activities.

It is expected that recreational activities between the helicopter staging areas and transmission structure sites would be disrupted during helicopter use, particularly as related to the enjoyment of solitude, and a natural outdoor environment. Such disturbance would result from factors that are inherent to the use of helicopters, including visual prominence, increased emissions (compared with ground construction), and operational noise. Specific flight paths are not known and would be determined based upon a variety of factors, including final engineering and weather conditions during the construction period. During helicopter operations, public access to defined areas would be restricted.

CEQA Significance

Impact R-1 for the Alternative 1 transmission line would require implementation of the following mitigation measures: R-1a, R-1b, R-1c, R-1d, and R-1e (Table 4-2.5-1). With implementation of these mitigation measures, Impact R-1 of the Alternative 1 transmission line would be less than significant.

Environmental Effects of Mitigation Measure R-1d

While R-1d is recommended to reduce impacts to recreationists using the PCT and/or other trails, this measure may adversely affect other areas. A trail diversion could potentially disturb sensitive biological resources or damage cultural resources that may be along the diverted route.

Such potential impacts are similar to the effects of other Alternative 1 activities, and would require the implementation of mitigation measures presented in Sections 4.3.1 (Biological Resources) and 4.2.10 (Cultural Resources).

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, temporary access restrictions to established recreational resources or disruption of activities within such resources as a result of construction activities would occur. These activities would negatively affect members of the public who would otherwise use the affected recreational resources. Such temporary impacts could also lead to unauthorized recreational uses of NFS lands, which is described in the discussion for Impact R-5. Coordination between LADWP and the USFS regarding road improvements and construction timelines would facilitate advanced planning for any potential access restrictions or recreational use disruptions that would occur under Impact R-1.

The following mitigation measures would help to reduce the significance of Impact R-1: R-1a, R-1b, R-1c, R-1d, and R-1e.

Mitigation measure R-1a would help to minimize Impact R-1 for both Developed and Dispersed Recreation (including recreational hunting in Zone D-11) by requiring coordination among relevant agencies. Similarly, R-1b through R-1e would help to minimize Impact R-1 through public awareness and outreach. R-1c is also similar to GP-30 (Temporary Closures). Implementation of R-1a through R-1e, as described above, would reduce Impact R-1 to a less than significant level.

Impact R-2: Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas.

During operation and maintenance activities of the Alternative 1 transmission line, it is expected that ground work would be limited to transmission structure locations and other ground-based infrastructure along the proposed route. The use of helicopters for operation and maintenance activities is also possible. Operation and maintenance activities for transmission facilities would cause long-term negligible to minor impacts to recreation activities adjacent to the ROW. Recreational resources that are adjacent to areas where ground work is necessary would be temporarily restricted from use during such activities, thus restricting access to or resulting in the disruption of normal recreational activities within such areas. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily limiting access and introducing noise and odors that may impact the recreation experience for users in the area.

Transmission line structures would increase raptor perch sites. This would increase the possibility of raptor presence and its role as watchable wildlife, and conversely could decrease other watchable wildlife species due to increased predation. The presence of structures would also change the physical setting and introduce a visual intrusion that could affect the recreation experience for dispersed recreation users. The presence of improved access roads to the ROWs may increase dispersed recreation (e.g., OHV) use and increase resource degradation of previously unused or little used areas.

The USFS generally does not restrict recreational use for standard utility operation/maintenance work, unless it involves a larger scale project which may endanger public safety. The level of operational and maintenance activity would not substantially increase on the ANF as the Alternative 1 transmission line would be in an existing transmission line corridor. Implementation of GP-50 would coordinate maintenance activities with federal, State, and/or local agencies to avoid conflicts with affected recreation areas. As such impacts would be less than significant.

The Alternative 1 transmission line would also require the granting of a ROW across the Castaic Lake State Recreation Area which has received LWCF grant funding. This conversion of land would constitute a conflict with the LWCF. Implementation of providing replacement property, undergrounding or avoidance would prevent the transmission line route's non-compliance with the LWCF, resulting in a low impact.

With implementation of GP-50 listed above, Impact R-2 from the Alternative 1 transmission line would be less than significant.

CEQA Significance

With implementation of GP-50 listed above, Impact R-2 on Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be less than significant.

Substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities (Criterion R2)

Impact R-3: The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail.

The Alternative 1 transmission line would include two crossings of the PCT. No structures or transmission-related infrastructure would be permanently on or within the PCT and no permanent closure or rerouting of the PCT would result, although temporary diversions during the construction period would be required. During construction and installation of the transmission line structures, temporarily elevated noise levels would be introduced through the use of construction vehicles and machinery, as well as helicopters. Although this type of noise would be disturbing, it would be temporary and would not lead to permanent degradation of the backcountry experience enjoyed by PCT recreationists. The portion of the PCT that would be crossed would be temporarily closed during construction and the PCT would be temporarily rerouted for the safety of recreationists using the trail.

Construction activities would not result in a permanent reroute of the PCT and no permanent physical modifications to the PCT would occur as a result of Alternative 1 transmission line activities. Additionally, the Alternative 1 transmission line would not change the existing types of land uses and recreational opportunities along and adjacent to the PCT. Alternative 1 transmission line activities that would alter the ability of recreationists to access and utilize the PCT would be temporary and of short duration. However, the recreational experience for users of the PCT would be temporarily degraded during construction activities and permanently altered due to the introduction of visual and noise features of new transmission structures. It should be noted here that visual resources and noise both contribute to the backcountry experience of the PCT. As such visual and noise aspects of the Alternative 1 transmission line are only discussed here in terms of their contributions to recreation, not in terms of specific visual and noise impacts that would be introduced by the Alternative 1 transmission line. Please see Sections 4.2.9 and 4.2.2 for identification and discussion of specific Project-related impacts to visual resources and noise, respectively. In terms of the recreational experiences of the PCT, mitigation measure R-1d would minimize such effects.

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of the mitigation measures R-1a and R-1d would reduce impacts to the recreational experience of the PCT to a less than significant level.

Impact R-4: The Project would contribute to degradation of Off-Highway Vehicle (OHV) routes or would result in a loss of recreational opportunity for OHV users.

Impact R-4 (The Project would contribute to degradation of Off-Highway Vehicle [OHV] routes or would result in a loss of recreational opportunity for OHV users) would occur on only one ANF designated OHV route under Alternative 1. This impact could occur primarily during construction through the upgrade of forest roads to accommodate construction equipment. Implementation of R-2 would avoid any permanent impacts to OHV routes on the ANF.

As previously discussed, the use of helicopters for construction of Alternative 1 would avoid the need to upgrade or construct portions of certain roadways.

Environmental Effects of Mitigation Measure R-2

While R-2 would avoid the permanent loss of OHV routes on OML 2 designated roads, this measure may adversely affect other issue areas. The activities that would be associated with returning improved roads to existing maintenance practices would require earthmoving equipment, which would increase construction noise within the ANF. Earthmoving and other equipment that may be required for this measure would also contribute to additional air quality emissions. In addition, greater land disturbance as a result of road activities would contribute to increased soil erosion, which would potentially affect water quality.

Such potential impacts are similar to the effects of other Project activities, and would require the implementation of mitigation measures presented in Sections 4.2.2 (Noise), 4.2.1 (Air Quality and Climate Change), and 4.3.3 (Water Resources).

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of R-2 would reduce Impact R-4 to a less than significant level.

Impact R-5: Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.

Impact R-5 would be minimal for the Alternative 1 transmission line with implementation of R-3. Impact R-5 would occur if Project activities result indirectly in an increase in unauthorized or unmanaged recreational activities. For instance, improvement of existing roads and installation of new roads could provide access to areas that were not previously accessible by roads. As a result, these new and improved roads could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes, such as OHV use in restricted USFS (ANF) areas. In addition, some recreational resources may become temporarily inaccessible during construction and/or maintenance of the proposed transmission line, which could potentially result in unmanaged recreational uses, as recreationists seek alternative or comparable recreational resources to those which are made unavailable. As previously discussed, the use of helicopters for construction of the Alternative 1 transmission line would avoid the need to install or improve spur roads to transmission structures that would be constructed by helicopter. Although ground access to pulling and stringing sites and staging areas would still be required, the Alternative 1 transmission line would require fewer spur road installations, as more structures would be constructed via helicopter. Improvement of existing roads and construction of new access and spur roads associated with the Alternative 1 transmission line could facilitate unmanaged recreational uses, particularly OHV use, within the ANF.

CEQA Significance

To minimize the potential for unmanaged recreation, implementation of R-2 and R-3 would be required for Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives. With implementation of these mitigation measures, Impact R-5 would be reduced to a less than significant level.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on

the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

The following section describes impacts to recreation as determined by the significance criteria listed above. Mitigation measures are introduced where necessary to reduce significant impacts to less than significant levels.

Helicopter Mitigation

Although no specific locations for this mitigation have been identified for Alternative 2, the USFS is expected to require the helicopter mitigation for construction in any area more than 300 feet from an existing road and with slopes greater than approximately 25 percent. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites.

The use of helicopters for construction of Alternative 2 would minimize the potential for unmanaged recreational uses to occur, particularly OHV use, within the ANF.

Potential impacts of the Alternative 2 transmission line that could affect Developed Recreation resources and opportunities are presented below in Table 4.2.5-4. A detailed description of each impact related to recreation is presented in the text following the table.

TABLE 4.2.5-4. RECREATION IMPACTS APPLICABLE TO DEVELOPED RECREATION RESOURCES IN THE STUDY AREA

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
23.3-25.5*	RCSD Parks System Master Plan Trail (M3)	R-1
25.6-25.7	RCSD Parks System Master Plan Trails (L10, M3)	R-1
25.7-27.8	RCSD Parks System Master Plan Trail (M3)	R-1
28.8-28.9	RCSD Parks System Master Plan Trail (L11)	R-1
29.2-29.3	RCSD Parks System Master Plan Trail (M3)	R-1
29.6-30.5*	RCSD Parks System Master Plan Trail (M3)	R-1
30.5-30.6	RCSD Parks System Master Plan Trails (M2, M3)	R-1
30.6-32.1*	RCSD Parks System Master Plan Trails (M2, M3)	R-1
32.1-32.2	RCSD Parks System Master Plan Trails (L9, M3)	R-1
32.2-32.6*	RCSD Parks System Master Plan Trail (M3)	R-1
34.6-34.7	LACRHT (Little Buttes)	R-1
36.8-37.0*	LACRHT (Little Buttes Trail and California Poppy)	R-1
45.1-45.2	LACRHT (North Side)	R-1
45.7-46.1*	LACRHT (North Side)	R-1
46.2-46.3	Forest Road - Burns Road (7N01) (OHV)	R-1, R-5
46.5-46.6	Forest Road 6N04.2 OHV	R-1, R-5
46.9-47.3*	Pacific Crest Trail	R-1, R-2, R-4
47.2** (approximate location)	Green Valley Station (Administration/Interpretive Site and Trailhead)	R-1
49.2-50.1	San Francisquito Canyon Eligible Wild and Scenic River	N/A
50.1-50.3*	San Francisquito Canyon Eligible Wild and Scenic River; Forest Road 7N02 (OHV)	R-1, R-2, R-5

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
50.3-51.8*	USFS Trail; San Francisquito Canyon Eligible Wild and Scenic River	R-1, R-2
51.8-52.1	San Francisquito Canyon Eligible Wild and Scenic River	N/A
52.1-53.2	San Francisquito Canyon Eligible Wild and Scenic River; City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-5
53.2-53.5*	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-2, R-5
53.7-53.8	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-5
53.9-54.0	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-5
54.3-54.6*	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-2, R-5
54.9-55.7*	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-2, R-5
56.0*** (approximate location)	A Place to Shoot (permitted commercial target shooting range)	R-1
58.0*** (approximate location)	Drinkwater OHV Staging Area (Parking/Staging Trailhead for OHV System)	R-1
58.0-58.2*	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-2, R-5
58.8-59.0*	Pettinger Canyon Road 5N28	R-1, R-2
59.1-59.2	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-5
59.3-59.4	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-5

*adjacent to and within impact zone **within 1-mile study corridor ***outside 1-mile study corridor
RCSD – Rosamond Community Services District LACRHT – Los Angeles County Riding and Hiking Trail

Directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas (Criterion R1)

Impact R-1: Construction activities would restrict access to or disrupt activities within established recreational areas.

Impact R-1 would occur for all Developed Recreation resources that would be traversed by the proposed transmission line. Recreational resources that would be crossed would not necessarily be physically impacted by the presence of the overhead transmission line, because in most cases the transmission line would span the resource or area without ground impact. Although recreation resources crossed by the Alternative 2 transmission line are not expected to be physically impacted, such resources and areas would be restricted from use during construction activities to protect the safety of public recreationists and to accommodate the transport and use of equipment and activities required to construct the new transmission line. During construction activities, ground work would be required at each structure pad location as well as along select roadways between the locations, as materials to build the structures would be transported by truck to the structure sites. As a result, resources and areas crossed by the transmission line would be temporarily closed during construction activities, as long as required to complete activities in a given location. Recreational areas near the proposed route (e.g., Drinkwater OHV Staging Area, A Place to Shoot, and Green Valley Station) may also experience temporary use disruptions due to factors such as construction noise and the potential need to stage construction vehicles, equipment, or infrastructure.

In addition to the developed recreation resources described in Chapter 3 (PCT, Rosamond Community Services District [RCSD] Parks System Master Plan trails, Los Angeles County Riding and Hiking Trail [LACRHT] trails, San Francisquito Canyon Eligible Wild and Scenic River, BLM routes, and USFS roads and trails), dispersed recreation opportunities would also be affected due to temporary access restrictions during the construction period, as well as possible activity disruptions due to factors such as construction equipment staging and noise generated during the construction period. The degree to which dispersed recreation opportunities would be affected in the ANF depends upon which Recreation Opportunity Spectrum (ROS) designation would be affected by closures or restrictions related to Alternative 2 construction. The type of recreational resource or opportunity available to the public largely depends upon the applicable ROS objective. In general, recreational activities within and adjacent to the Project ROW would be temporarily suspended during transmission line construction.

Other resource uses may be temporarily restricted due to access restrictions from the use of BLM and NFS roads and trails for construction activities. Identification of the exact roads and necessary improvements required during Project construction is pending finalization of a Project Road Plan, which would be produced during final engineering for the Project. However, it is assumed that developed or dispersed recreation within 0.5 mile of the proposed route would have the potential to be affected by Impact R-1 as a result of construction-related road closures.

Recreational hunting activities permitted in Zone D-11 would be affected by Impact R-1 as a result of construction noise, traffic, and road closures. The aspect of Project construction that would likely be most disruptive to recreational hunting activities is road closures that would potentially restrict hunters from accessing certain areas of the ANF. In addition to road closures that could restrict hunters' movement through the Forest, recreational hunting could also be affected by aspects of Project construction such as noise from heavy equipment that may affect the presence and movement of wildlife.

Impact R-1 would also apply to OHV routes that would need to be improved or upgraded to accommodate construction vehicle traffic. Under Angeles National Forest Roadway Operational Maintenance Level Guidelines, OHV use is restricted to roads maintained to OML 2 due to safety concerns associated with passenger vehicles and OHVs traveling on the same roadways (OML 2 roads are not accessible by passenger vehicles). If an OML 2 road is required for construction access during Project installation, roadway requirements associated with construction vehicle access would require that upgrades comparable to OML 3 would need to be applied, thereby temporarily disrupting OHV activity during the construction period. However, any such road improvements would be temporary and would not be maintained following the Project construction period; designated OMLs would not be permanently altered.

It is also possible that, if existing OHV routes are restricted during Project construction (Impact R-1), some OHV recreationists may choose to utilize illegal OHV routes or create new, unauthorized OHV routes in the Forest, thereby resulting in unmanaged or unauthorized recreational uses (refer to Impact R-5, Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.).

Temporary access restrictions to established recreational areas or disruption of activities within such areas as a result of Project construction would negatively affect members of the public who would otherwise use the affected recreational resources. Such temporary impacts could also lead to unauthorized recreational uses of NFS lands. Coordination between LADWP and the USFS regarding road improvements and construction timelines would facilitate advanced planning for any potential access restrictions or recreational use disruptions that would occur under Impact R-1. The mitigation measures would help to reduce the significance of Impact R-1.

Environmental Effects of Mitigation Measure R-1d

While R-1d is recommended to reduce impacts to recreationists using the PCT and/or other trails, this measure may adversely affect other areas. A trail diversion could potentially disturb sensitive biological resources or damage cultural resources that may be along the diverted route. Such potential impacts are similar to the effects of other Project activities, and would require the implementation of mitigation measures presented in Sections 4.3.1 (Biological Resources) and 4.2.10 (Cultural Resources).

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, temporary access restrictions to established recreational resources or disruption of activities within such resources as a result of construction activities would occur. These activities would negatively affect members of the public who would otherwise use the affected recreational resources. Implementation of mitigation measures R-1a through R-1e, as described in Table 4.2.5-1, would reduce Impact R-1 to a less than significant level.

Substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities (Criterion R2)

Impact R-2: Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas.

During operation and maintenance activities, it is expected that ground work would be limited to transmission structure locations and other ground-based infrastructure along the proposed route. The use of helicopters for operation and maintenance activities is also possible. Operation and maintenance activities for transmission facilities would cause long-term negligible to minor impacts to recreation activities adjacent to the ROW. Recreational resources that are adjacent to areas where ground work is necessary would be temporarily restricted from use during such activities, thus restricting access to or resulting in the disruption of normal recreational activities within such areas. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily limiting access and introducing noise and odors that may impact the recreation experience for users in the area.

Transmission line structures would increase raptor perch sites. This would increase the possibility of raptor presence and its role as watchable wildlife, and conversely could decrease other watchable wildlife species due to increased predation. The presence of structures would also change the physical setting and introduce a visual intrusion that could affect the recreation experience for dispersed recreation users. The presence of improved access roads to the ROWs may increase dispersed recreation (e.g., OHV) use and increase resource degradation of previously unused or little used areas.

The USFS generally does not restrict recreational use for standard utility operation/maintenance work, unless it involves a larger scale project which may endanger public safety. The level of operational and maintenance activity would not substantially increase on the ANF as the Alternative 2 transmission line would be in an existing transmission line corridor. Implementation of GP-50 would coordinate maintenance activities with federal, State, and/or local agencies to avoid conflicts with affected recreation areas. As such impacts would be less than significant.

CEQA Significance

With implementation of GP-50 listed above, Impact R-2 on Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be less than significant.

Impact R-3: Cause or contribute to degradation of the Pacific Crest National Scenic Trail.

The Alternative 2 transmission line would include one crossing of the PCT. No structures or transmission-related infrastructure would be permanently on or within the PCT and no permanent closure or rerouting of the PCT would result, although temporary diversions during the construction period would be required. During construction and installation of the transmission line structures, temporarily elevated noise levels would be introduced through the use of construction vehicles and machinery. Although this type of noise would be disturbing, it would be temporary and would not lead to permanent degradation of the backcountry experience enjoyed by PCT recreationists. The portion of the PCT that would be crossed would be temporarily closed during construction and the PCT would be temporarily rerouted for the safety of recreationists using the trail.

Construction activities would not result in a permanent reroute of the PCT and no permanent physical modifications to the PCT would occur as a result of Project activities. Additionally, the Proposed Action would not change the existing types of land uses and recreational opportunities along and adjacent to the PCT. Project activities that would alter the ability of recreationists to access and utilize the PCT would be temporary and of short duration. However, the recreational experience for users of the PCT would be temporarily degraded during construction activities and permanently altered due to the introduction of visual and noise features of new transmission structures. It should be noted here that visual resources and noise both contribute to the pristine backcountry experience of the PCT. As such, the visual and noise aspects of the Project are only discussed here in terms of their contributions to recreation, not in terms of specific Visual and Noise impacts that would be introduced by the Proposed Action. Please see Sections 4.2.2 (Noise) and 4.2.9 (Visual Resources) for identification and discussion of specific Project-related impacts to those resources. In terms of the recreational experiences of the PCT, the following mitigation measures would be required to minimize such effects.

CEQA Significance

Construction of Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not result in a permanent reroute of the PCT and no permanent physical impacts to the PCT would occur as a result of Project activities. Additionally, the Project would not change the existing types of land uses and recreational opportunities along and adjacent to the PCT. Project activities that would alter the ability of recreationists to access and utilize the PCT would be temporary and of short duration. However, because the recreational experience for users of the PCT would be temporarily degraded during construction activities and permanently altered due to the introduction of new transmission towers, the following mitigation measures, as described in Table 4.2.5-1, would be required to minimize such effects: R-1a and R-1d.

Implementation of these mitigation measures would reduce impacts to the recreational experience of the PCT to a less than significant level.

Impact R-4: Contribute to degradation of Off-Highway Vehicle (OHV) routes or would result in a loss of recreational opportunity for OHV users.

Impact R-4 would occur if existing OHV routes are permanently removed from use as a result of Project activities. Construction or operation and maintenance activities could result in the long-term loss or degradation of OHV routes if such activities would require that OHV routes or trails be repeatedly and/or frequently closed due to maintenance activities, or if OHV routes are permanently closed or altered. The Alternative 2 transmission line would traverse NFS lands in the ANF that have an ROS designation of Semi-Primitive Motorized, which permits motorized use of local primitive or collector roads and includes trails suitable for off-highway vehicles such as motorbikes and ATVs.

It is expected that during construction, the transport of construction vehicles and equipment to transmission structure sites would require that access roads be upgraded to OML 3 standards, to accommodate the large size of construction vehicles, equipment, and materials. Upgrading of roads designated as OML 2 to OML 3 standards during the construction period would result in temporary restriction of OHV use, or temporary loss of OHV opportunities, until the affected roads are returned to OML 2 conditions. Operation and maintenance activities would require that ground-access be available to all transmission structure sites; however, operation and maintenance would not require the heavy equipment required during construction and, therefore, roads designated as OML 2 would be sufficient to accommodate operation and maintenance activities. Road upgrades that are applied during the construction period would be strictly temporary; no permanent upgrades to existing OML standards would occur as a result of the Project. Therefore, any loss of recreational opportunity to OHV users would be temporary in nature. To minimize the effects of Impact R-4, R-2 is recommended.

Environmental Effects of Mitigation Measure R-2

While R-2 would avoid the permanent loss of OHV routes on OML 2 designated roads, this measure may adversely affect other issue areas. The activities that would be associated with returning improved roads to existing maintenance practices would require earthmoving equipment, which would increase construction noise within the ANF. Earthmoving and other equipment that may be required for this measure would also contribute to additional air quality emissions. In addition, greater land disturbance as a result of road activities would contribute to increased soil erosion, which would potentially affect water quality.

Such potential impacts are similar to the effects of other Project activities, and would require the implementation of mitigation measures presented in Sections 4.2.1 (Air Quality and Climate Change), 4.2.2 (Noise), and 4.3.3 (Water Resources).

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, road improvements or access restrictions that would result in a loss of recreational opportunity for OHV users would be temporary in nature. Designated OML standards for NFS roads would not be permanently altered; however, OHV use would be restricted on roadways improved above OML 2 standards (OML 3, 4, or 5) until the affected roadways are returned to existing conditions. To ensure that existing OHV routes would not be permanently removed from OHV use due to Project construction, R-2 would be required. Implementation of this mitigation measure would ensure coordination between LADWP and the USFS in developing and implementing necessary road improvements in a way that is consistent with existing OML designations. Due to the availability of OHV opportunities throughout the ANF and the temporary nature of Impact R-4 to OHV opportunities along the Proposed Action alignment, implementation of R-2 would reduce Impact R-4 to a less than significant level.

Impact R-5: Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.

Long-term loss or degradation of recreational resources or opportunities could occur through unmanaged or unauthorized use of such resources. Unmanaged recreation could occur if the Project facilitates access to areas that are not intended or suitable for certain recreational uses, particularly through the creation or improvement of roadways in the ANF. Two types of roads are associated with construction and operation of the Project: access roads and spur roads. Access roads serve as the main transportation route along the Project ROW, whereas spur roads are smaller roads that connect access roads directly to structure sites and are not considered part of NFS roads. Unmanaged recreation activities (particularly OHV-related) currently occur throughout the ANF via existing spur roads and utility corridors.

During construction and operation of the Project, existing roadways would be utilized wherever possible to accommodate necessary traffic of vehicles and equipment. However, construction of new roads and improvement of existing roads would also be required to provide access to the proposed route during construction and operation of the Project. In some areas, improvement of existing roads and construction of new roads may provide access to areas that are not currently accessible by roads. As a result, these new and improved roads could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes, as described above.

In addition, some recreational resources may become temporarily inaccessible or precluded from use during construction and/or operation and maintenance of the Project, as described above for Impact R-1 (Construction activities would restrict access to or disrupt activities within established recreational areas) and Impact R-2 (Operational and maintenance activities would restrict access to or disrupt activities within established recreational areas). This could potentially result in unmanaged recreational uses, as recreationists seek alternative or comparable recreational resources to those which are made unavailable by Project activities.

As discussed above, the Project would be situated on BLM land and NFS lands in the ANF. Although existing roads would be utilized to the fullest extent possible during Project construction and operation, roadway improvements would be required in some areas, particularly for hillside structures in the ANF. The creation of new roads and the improvement of existing roads could potentially facilitate OHV access to areas of the ANF that are not authorized for OHV use, which would contribute to resource damage and degradation. As discussed in the analysis of Impact R-4 (Contribute to degradation of Off-Highway Vehicle [OHV] trails or Open Riding Areas, or would result in a loss of recreational opportunity for OHV users), it is expected that Project construction activities would require that some roads in the Forest be upgraded to OML 3 standards, which would preclude the use of OHVs; such preclusion or restriction from use may encourage some OHV recreationists to utilize other roads, which may not necessarily be designated for OHV use, thereby participating in unmanaged recreation.

Identification of specific roads and necessary improvements required for Project construction would be determined in LADWP's Project Road Plan, which would be included as part of final engineering. Recreation Opportunity Spectrum objectives have been designated for each roadway in the vicinity of the Project. These ROS designations are indicative of the types of recreational activities the USFS intends to encourage in the area. If unmanaged or unauthorized OHV use occurs in an area that is incompatible with OHV recreation (e.g., ROS Semi-Primitive Non-Motorized) as a result of Project-related road improvements in the area, such unmanaged recreation would be contrary to USFS management objectives of the relevant OHV-incompatible ROS designation.

Additionally, it is possible that some OML 1 roads may need to be upgraded to OML 2 or higher to facilitate Project construction access. Such upgrades would essentially create new roads that are passable by OHVs and as a result, some OHV recreationists may choose to participate in OHV recreation on these improved roads, regardless of whether such roads are intended by the ANF to be managed for OHV use. The installation of new access or spur roads where none currently exist would have the potential to facilitate unmanaged recreational uses. As discussed, of particular concern regarding unmanaged recreation in the ANF is the potential for OHV recreationists to use Project roads to operate OHVs in areas where such use is prohibited by ANF management goals and objectives.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, improvement of existing roads and construction of new access and spur roads associated with the Project could facilitate unmanaged recreational uses, particularly OHV use, within the ANF. to minimize the potential for unmanaged recreation to occur, implementation of mitigation measures R-2 and R-3 would be required. With implementation of these mitigation measures, Impact R-5 would be reduced to a less than significant level.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

Impacts associated with Alternative 2a would primarily be the same as impacts associated with the Proposed Action (Alternative 2). This Alternative, however, would introduce a reroute of the proposed transmission line around the unincorporated community of Green Valley. The reroute would require helicopter construction for four miles.

Helicopter Mitigation

Within the ANF where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed with the use of helicopters (such as the Hughes 500 or Bell 212, or Sikorsky Skycrane). Refer to Figure 2-22, the Identified Helicopter Mitigation Locations Map, which illustrates the identified locations for this mitigation. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites.

The use of helicopters for construction of Alternative 2a would minimize the potential for unmanaged recreational uses to occur, particularly OHV use, within the ANF.

Potential impacts of the Alternative 2a transmission line that could affect Developed Recreation resources and opportunities (Green Valley Bypass only) are presented below in Table 4.2.5-5. A description of each impact related to recreation is presented in the text following the table.

TABLE 4.2.5-5. RECREATION IMPACTS APPLICABLE TO DEVELOPED RECREATION RESOURCES IN THE STUDY AREA

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
0.0-01	LACRHT (North Side)	R-1
2.3-2.4	Forest Road 7N02 (OHV)	R-1, R-5
3.2-3.3	Pacific Coast Trail	R-1, R-2, R-4
4.9-5.9	Tule IRA – 1C	R-1, R-2
6.4-6.5	San Francisquito Canyon Eligible Wild and Scenic River	N/A

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
6.5-6.6	San Francisquito Canyon Eligible Wild and Scenic River; LACRHT (Unidentified)	R-1
56.0** (approximate location)	A Place to Shoot (permitted commercial target shooting range)	R-1
58.0** (approximate location)	Drinkwater OHV Staging Area (Parking/Staging Trailhead for OHV System)	R-1

LACRHT – Los Angeles County Riding and Hiking Trail
**outside 1-mile study corridor

Directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas (Criterion R1)

Impact R-1: Construction activities would restrict access to or disrupt activities within established recreational areas

The Alternative 2a transmission would have similar impacts for Impact R-1 as with the Proposed Action (Alternative 2). The Alternative 2a transmission line, however, would be adjacent to the Tule Inventoried Roadless Area (IRA). IRAs are identified by the USFS as Primitive ROS objectives. In general, IRAs would be less impacted by Alternative 2a than by Alternative 1, which directly crosses an IRA. Both Alternatives would cause disruption to the solitude and natural values of the IRA mainly by the use of helicopters. As described in Alternative 2, Impact R-1 would occur in recreational areas which would be traversed by the Project because these areas would require temporary closure during construction activities and therefore, such areas would be temporarily restricted from use. In addition, recreational resources or opportunities may also be restricted from use if access roads or trails to such areas are blocked or restricted during construction activities. Recreational areas in the near vicinity of the proposed route (e.g., Drinkwater OHV Staging Area and A Place to Shoot) may also experience temporary use disruptions due to factors such as construction noise and the potential need to stage construction vehicles, equipment, or infrastructure. Although helicopter construction is expected to avoid the need to construct or improve some roads in the ANF, ground access would still be required to pulling and stringing locations along the Alternative 2a transmission line, as well as to helicopter staging areas.

It is expected that recreational activities between the helicopter staging areas and transmission structure sites would be disrupted during helicopter use, particularly as related to the enjoyment of solitude, and a natural outdoor environment. Such disturbance would result from factors that are inherent to the use of helicopters, including visual prominence, increased emissions (compared with ground construction), and operational noise. Specific flight paths are not known at this time and would be determined based upon a variety of factors, including final engineering and weather conditions during the construction period. During helicopter operations, public access to defined areas would be restricted.

CEQA Significance

With implementation of the mitigation measures R-1a through R-1e, Impact R-1 on Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be less than significant.

Impact R-2: Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas.

During operation and maintenance activities, it is expected that ground work would be limited to transmission structure locations and other ground-based infrastructure along the proposed route. The use of helicopters for operation and maintenance activities is also possible. Operation and maintenance activities for transmission facilities would cause long-term negligible to minor impacts to recreation activities adjacent to the ROW. Recreational resources that are adjacent to areas where ground work is necessary would be temporarily restricted from use during such activities, thus restricting access to or resulting in the disruption of normal recreational activities within such areas. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily limiting access and introducing noise and odors that may impact the recreation experience for users in the area.

Transmission line structures would increase raptor perch sites. This would increase the possibility of raptor presence and its role as watchable wildlife, and conversely could decrease other watchable wildlife species due to increased predation. The presence of structures would also change the physical setting and introduce a visual intrusion that could affect the recreation experience for dispersed recreation users. The presence of improved access roads to the ROWs may increase dispersed recreation (e.g., OHV) use and increase resource degradation of previously unused or little used areas.

The portion of the Alternative 2a transmission line on NFS lands that would be outside an existing utility corridor would see an increase in O/M activity as there are no lines being maintained there now. However, these activities normally do not require restrictions or closures to recreational use on the ANF. Implementation of GP-50 would coordinate maintenance activities with federal, State, and/or local agencies to avoid conflicts with affected recreation areas. As such impacts would be less than significant.

CEQA Significance

With implementation of GP-50 listed above, Impact R-2 on Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be less than significant.

Substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities (Criterion R2)

Impact R-3: The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail.

The Alternative 2a transmission line would result in the greatest extent of Impact R-3 of all the Alternatives. The Alternative 2a transmission line would include one crossing of the PCT, but would cross the trail several miles from existing transmission line crossings, giving the effect of spreading the impact along the trail instead of consolidating it. This is contrary to the preference of the Pacific Crest Trail Association (PCTA) as indicated during scoping. PCTA represents all trail users and is recognized as a primary partner to the USFS in management of the PCT. The Alternative 2a transmission line would also run along and close to the PCT for two miles, resulting in even greater impacts from sights and sounds of construction (temporary) and greater impact on visual resources (permanent). As described under Alternative 2, this impact addresses the potential loss or degradation to physical aspects of the PCT as well as the potential loss or degradation of the backcountry experience. The discussion provided above for Impact R-1 of Alternative 2a describes that certain factors associated with helicopter use, such as aesthetics, emissions, and noise, would result in a more substantial effect on recreational resources and public recreationists than would ground-based construction. Similarly, helicopter construction in the vicinity of the PCT would have a larger contribution to the degradation of the backcountry experience than would ground based construction activities. Impact R-3 for the Alternative 2a transmission line would require implementation of the following mitigation measures, which are described in detail in Table 4.2.5-1: R-1a and R-1d.

Although mitigation measures would minimize impacts to the PCT, they would not reduce them to a level that is less than significant. Impact R-3 for Alternative 2a would remain significant.

CEQA Significance

Although mitigation measures R-1a and R-1d would minimize impacts to the PCT, they would not reduce them to a level that is less than significant. Impact R-3 for Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would remain significant.

Impact R-4: The Project would contribute to degradation of Off-Highway Vehicle (OHV) routes or would result in a loss of recreational opportunity for OHV users.

The Alternative 2a transmission line has the greatest potential for Impact R-4 in terms of numbers and mileage of ANF designated OHV routes. As described under Alternative 2, this impact could occur if Project activities would require that OHV roads or trails be repeatedly and frequently closed due to maintenance activities, or permanently closed or altered due to operational activities. As previously discussed, the use of helicopters for construction of the Alternative 2a transmission line would avoid the need to upgrade or construct certain roadways. However, the Alternative 2a transmission line would require ground access to pulling and stringing sites and staging areas. Road upgrades implemented during the construction period would be strictly temporary; no permanent upgrades to existing OML standards would occur as a result of the Project. Therefore, any loss of recreational opportunity to OHV users would be temporary in nature. To minimize the effects of Impact R-4, R-2 is recommended.

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of R-2 would reduce Impact R-4 to a less than significant level.

Impact R-5: Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.

Impact R-5 would be similar for the transmission line of Alternative 2a and Alternative 2. As described under Alternative 2, Impact R-5 would occur if Project activities result in unauthorized or unmanaged recreational activities. For instance, improvement of existing roads and installation of new roads could provide access to areas that were not previously accessible by roads. As a result, these new and improved roads could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes, such as OHV use in restricted USFS (ANF) areas. In addition, some recreational resources may become temporarily inaccessible during construction and/or maintenance of the proposed transmission line, which could potentially result in unmanaged recreational uses, as recreationists seek alternative or comparable recreational resources to those which would be made unavailable. As previously discussed, the use of helicopters for construction of the Alternative 2a transmission line would avoid the need to install or improve spur roads to transmission structures that would be constructed by helicopter. Although ground access to some of the same pulling and stringing sites as the Alternative 2 transmission line would still be required, the Alternative 2a transmission line would require fewer spur road installations, as more structures would be constructed via helicopter.

CEQA Significance

Implementation of mitigation measures R-2 and R-3 would reduce Impact R-5 on Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, to a less than significant level.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Potential impacts of the Alternative 3 transmission line that could affect Developed Recreation resources and opportunities are presented below in Table 4.2.5-6. A detailed description of each impact related to recreation is presented in the text following the table.

Table 4.2.5-6. Recreation Impacts Applicable to Developed Recreation Resources in the Study Area

Milepost(s)	Recreational Resource	Potentially Applicable Impacts
23.3-25.6*	RCSD Parks System Master Plan Trail (M3)	R-1
25.6-25.7	RCSD Parks System Master Plan Trail (L10 M3)	R-1
25.7-27.8*	RCSD Parks System Master Plan Trail (M3)	R-1
28.8-28.9	RCSD Parks System Master Plan Trail (L11)	R-1
29.2-29.3	RCSD Parks System Master Plan Trail (M3)	R-1
29.6-30.5*	RCSD Parks System Master Plan Trail (M3)	R-1
30.5-30.6	RCSD Parks System Master Plan Trail (M2, M3)	R-1
30.6-32.1*	RCSD Parks System Master Plan Trail (M3)	R-1
32.1-32.2	RCSD Parks System Master Plan Trail (L9, M3)	R-1
32.2-32.6*	RCSD Parks System Master Plan Trail (M3)	R-1
34.6-34.7	LACRHT (Little Buttes)	R-1
36.8-37.0*	LACRHT (Little Buttes and California Poppy)	R-1
41.5-41.7*	LACRHT (California Poppy)	R-1
50.4-50.6*	LACRHT (North Side Trail)	R-1
50.9-51.2*	LACRHT (North Side Connector Trail)	R-1
53.8-53.9	MRCA Parkland Trail	R-1
53.9-54.2*	City of Palmdale Trail	R-1
54.7-55.0*	MRCA Parkland Trail	R-1
55.4-55.7*	MRCA Parkland Trail	R-1
55.8-55.9	MRCA Parkland Trail	R-1
56.2-56.3	MRCA Parkland Trail	R-1
56.3-56.5*	City of Palmdale Trail; MRCA Parkland Trail	R-1
56.6-57.0*	MRCA Parkland Trail	R-1
57.0-57.3	Ritter Ranch (MRCA Property)	R-1, R-2
57.3-57.6*	Ritter Ranch (MRCA Property); MRCA Parkland Trail	R-1, R-2
57.6-58.0	Ritter Ranch (MRCA Property)	R-1, R-2
59.7-59.8	LACRHT (Vasquez Loop)	R-1
62.0-62.1	Pacific Crest Trail	R-1, R-2, R-4
62.1-62.2	LACRHT (Unidentified); Pacific Crest Trail	R-1, R-2, R-4
62.4-62.5	LACRHT (Unidentified); Pacific Crest Trail	R-1, R-2, R-4
62.5-63.1*	LACRHT (Vasquez Loop)	R-1
66.3** (approximate location)	Rowher Flat OHV Area (Staging/Trailhead for OHV System)	R-1
66.8-66.9	LACRHT (Unidentified)	R-1
70.1-70.2	LACRHT (Unidentified)	R-1
70.3-70.5*	LACRHT (Unidentified)	R-1
70.8-71.1*	LACRHT (Unidentified)	R-1
71.2-71.3	LACRHT (Unidentified)	R-1
72.1-72.3*	LACRHT (Bouquet)	R-1
74.6-75.2*	Pettinger Canyon Road (5N28)	R-1, R-2
75.2-75.5*	City Highline Motorway FR Rd (6N21) (OHV)	R-1, R-2, R-5

*adjacent to and within impact zone **outside 1-mile study corridor
RCSD – Rosamond Community Services District LACRHT - Los Angeles County Riding and Hiking Trail

Directly or indirectly disrupt or preclude activities in established federal, State, or local recreation areas (Criterion R1)

Impact R-1: Construction activities would restrict access to or disrupt activities within established recreational areas.

Impact R-1 would occur for all Developed Recreation resources that the proposed transmission line would traverse. Recreational resources that would be crossed would not necessarily be physically impacted by the presence of the overhead transmission line, because in most cases the transmission line would span over the resource or area without any ground impact. Although it is not anticipated that recreation resources that would be crossed by the Alternative 3 transmission line would be physically impacted, such resources and areas would be restricted from use during construction activities to protect the safety of public recreationists and to accommodate the transport and use of equipment and activities required to construct the new transmission line. During construction activities, ground work would be required at each structure pad location as well as along select roadways between the locations, as materials to build the structures would be transported by truck to the structure sites. As a result, resources and areas crossed by the transmission line would be temporarily closed during construction activities, for only as long as required to complete activities in a given location. Recreational areas in the near vicinity of the proposed route (e.g., Rowher Flat OHV Area) may also experience temporary use disruptions due to factors such as construction noise and the potential need to stage construction vehicles, equipment, or infrastructure. In addition to developed recreation resources (PCT, RCSD Parks System Master Plan trails, City of Palmdale trails, LACRHT trails, MRCA property and trails, BLM routes), dispersed recreation opportunities would also be affected due to temporary access restrictions during the construction period, as well as possible activity disruptions due to factors such as construction equipment staging and noise generated during the construction period. For example, recreational hunting permitted in Zone D-11 would be affected by Impact R-1 as a result of construction noise, traffic, and road closures, with road closures that would potentially restrict hunters from accessing certain areas of the ANF introducing the most noticeable effect.

The degree to which dispersed recreation opportunities would be affected in the ANF would depend upon which ROS designation would be affected by closures or restrictions related to the Alternative 3 transmission line construction. The type of recreational resource or opportunity available to the public largely depends upon the applicable ROS objective. In general, recreational activities within and adjacent to the Alternative 3 transmission line ROW would be temporarily suspended during construction.

Temporary access restrictions to established recreational resources or disruption of activities as a result of construction and maintenance activities would negatively affect members of the public who would otherwise use the affected recreational resources. Implementation of R-1a through R-1e, as described in Table 4.2.5-1, would reduce Impact R-1 to a less than significant level.

Alternative 3 would have the least impact of all the Alternatives on ANF recreation, both developed and dispersed. This is due to Alternative 3 crossing the least miles of NFS lands of the Alternatives.

Environmental Effects of Mitigation Measure R-1d

While R-1d is recommended to reduce impacts to recreationists using the PCT and/or other trails, this measure may adversely affect other areas. A trail diversion could potentially disturb sensitive biological resources or damage cultural resources that may be along the diverted route. Such potential impacts are similar to the effects of other Project activities, and would require the implementation of mitigation measures presented in Sections 4.3.1 (Biological Resources) and 4.2.10 (Cultural Resources).

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, temporary access restrictions to established recreational resources or disruption of activities as a result of construction and maintenance activities would negatively affect members of the public who would otherwise use the affected recreational resources. Implementation of R-1a through R-1e, as described in Table 4.2.5-1, would reduce Impact R-1 to a less than significant level.

Substantially contribute to the long-term loss or degradation of the factors that contribute to the value of federal, State, local, or private recreational facilities (Criterion R2)

Impact R-2: Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas.

During operation and maintenance activities, ground work is expected to be limited to transmission structure locations and other ground-based infrastructure along the proposed route. The use of helicopters for operation and maintenance activities is also possible. Operation and maintenance activities for transmission facilities would cause long-term negligible to minor impacts to recreation activities adjacent to the ROW. Recreational resources that are adjacent to areas where ground work is necessary would be temporarily restricted from use during such activities, thus restricting access to or resulting in the disruption of normal recreational activities within such areas. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily limiting access and introducing noise and odors that may impact the recreation experience for users in the area.

Transmission line structures would increase raptor perch sites. This would increase the possibility of raptor presence and its role as watchable wildlife, and conversely could decrease other watchable wildlife species due to increased predation. The presence of structures would also change the physical setting and introduce a visual intrusion that could affect the recreation experience for dispersed recreation users. The presence of improved access roads to the ROWs may increase dispersed recreation (e.g., OHV) use and increase resource degradation of previously unused or little used areas.

The USFS generally does not restrict recreational use for standard utility operation/maintenance work, unless it involves a larger scale project which may endanger public safety. The level of operational and maintenance activity would not substantially increase on the ANF as the Alternative 3 transmission line would be in an existing transmission line corridor. Implementation of GP-50 would coordinate maintenance activities with federal, State, and/or local agencies to avoid conflicts with affected recreation areas. As such impacts would be less than significant.

Impact R-2 would only marginally occur on the ANF with the Alternative 3 transmission line as the alignment would cross the fewest miles of NFS lands.

CEQA Significance

With implementation of GP-50 listed above, Impact R-2 on Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would be less than significant.

Impact R-3: Cause or contribute to degradation of the Pacific Crest National Scenic Trail.

The Alternative 3 transmission line would include three PCT crossings. No structures or transmission-related infrastructure would be permanently on or within the PCT and no permanent closure or rerouting of the PCT would result, although temporary diversions during the construction period would be required. During construction and installation of the transmission line structures, temporarily elevated noise levels would be introduced through the use of construction vehicles and machinery. Although this type of noise would be disturbing, it would be temporary and would not lead to permanent degradation of the backcountry experience enjoyed by PCT recreationists. The portion of the PCT that would be crossed would be temporarily closed during construction and the PCT would be temporarily rerouted for the safety of recreationists using the trail.

Construction activities would not result in a permanent PCT reroute and no permanent PCT physical modifications would occur as a result of Project activities. Additionally, the Project would not change the existing types of land uses and recreational opportunities along and adjacent to the PCT. Project activities that would alter recreationists' ability to access and utilize the PCT would be temporary and of short duration. However, the recreational experience for users of the PCT would be temporarily degraded during construction activities and permanently altered due to the introduction of visual and noise features of new transmission structures. It should be noted here that visual resources and noise both contribute to the backcountry experience of the PCT. As such, the visual and noise aspects of Alternative 3 are only discussed here in terms of their contributions to recreation, not in terms of specific visual and noise impacts that would be introduced by the Project. Please see Sections 4.2.9 and 4.2.2 for identification and discussion of specific Project-related impacts to visual resources and noise, respectively. In terms of the recreational experiences of the PCT, mitigation measures R-1a and R-1d would be implemented to minimize such effects.

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of the mitigation measures R-1a and R-1d would reduce impacts to the recreational experience of the PCT to a less than significant level.

Impact R-4: Contribute to degradation of Off-Highway Vehicle (OHV) routes or would result in a loss of recreational opportunity for OHV users.

Impact R-4 would be similar under Alternative 3 to Alternative 2. As described under Alternative 2, this impact could occur if Project activities would require that OHV roads or trails be repeatedly and frequently closed due to maintenance activities, or permanently closed or altered due to operational activities.

Environmental Effects of Mitigation Measure R-2

While R-2 (Avoid permanent upgrades to Forest System roads) would avoid the permanent loss of OHV routes on OML 1 or 2 designated roads, this measure may adversely affect other issue areas. The activities associated with returning improved roads to existing maintenance practices would require earthmoving equipment, which would increase construction noise within the ANF. Earthmoving and other equipment that may be required for this measure would also contribute to additional air quality emissions. In addition, greater land disturbance as a result of road activities would contribute to increased soil erosion, which would potentially affect water quality.

Such potential impacts are similar to the effects of other Project activities, and would require the implementation of mitigation measures presented in Sections 4.2.2 (Noise), 4.2.1 (Air Quality and Climate Change), and 4.3.3 (Water Resources).

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of R-2 would reduce Impact R-4 to a less than significant level.

Impact R-5: Indirectly increase unauthorized or unmanaged recreational uses that would contribute to the long-term loss or degradation of nearby recreational opportunities.

Impact R-5 would be minimal with the Alternative 3 transmission line. Impact R-5 would occur if Project activities result indirectly in an increase in unauthorized or unmanaged recreational activities. For instance, improvement of existing roads and installation of new roads could provide access to areas that were not previously accessible by roads. As a result, these new and improved roads could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. In addition, some recreational resources may become temporarily inaccessible during construction and/or maintenance of the proposed transmission line, which could potentially result in unmanaged recreational uses, as recreationists seek alternative or comparable recreational resources to those which are made unavailable. Improvement of existing roads and construction of new access and spur roads associated with the Alternative 3 transmission line could facilitate unmanaged recreational uses, particularly OHV use, within the ANF. While the Alternative 3 transmission line presents potential for this impact, the potential is the lowest for all the transmission line alignments due to its crossing the fewest miles of NFS lands, and no new road construction being anticipated on the ANF.

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of R-2 and R-3, would reduce Impact R-5 to a less than significant level.

Summary and Comparison of Alternatives

Table 4.2.5-7 provides a summary comparison of impacts related to recreation for the No Action Alternative and the 230 kV double-circuit transmission line for each action Alternative. Because the impacts of the Project components common to all action Alternatives would be the same for each action Alternative, their impacts have not been included in the comparison table.

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TABLE 4.2.5-7. SUMMARY COMPARISON OF RECREATION IMPACTS

Environmental Issues/Concerns	Alternative 1	Alternative 2 (Proposed Action)	Alternative 2a	Alternative 3	No Action Alternative
Ground Disturbance					
New Access Roads (miles)	7.3	0.1	0.1	0.6	Under the No Action Alternative, impacts to recreation resources would not occur.
Temporary (acres)	576 -599	398 – 399	405 – 409	512 – 520	Same as above.
Permanent (acres)	120 - 199	57 - 70	59 - 75	91 - 135	Same as above.
Helicopter Construction (miles)	8.4	0.0	3.6	0.0	Same as above.
Inventoried Roadless Area Crossed (miles)	0.1 (centerline) 1.7 (500 foot impact corridor)	0.0	0.4 (500 foot impact corridor	0.0	Same as above.
Pacific Crest Trail Crossings (#)	1	1	1	3	Same as above.
California State Recreation Area Crossed (miles)	0.0	0.0	0.0	0.0	Same as above.
Mountains Recreation and Conservation Authority Parkland Crossed (miles)		0.0	0.0	1.0	Same as above.

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4.2.6 PUBLIC SERVICES AND UTILITIES

Introduction

The purpose of this section is to evaluate the public services and utilities system impacts related to implementation of the Proposed Action and its Alternatives. This section provides an overview of the technical methodology used in evaluating impacts, describes the impacts to these resources from construction and operation of the Proposed Action and Alternatives (based upon NEPA/CEQA criteria), and presents mitigation measures to reduce, eliminate or avoid potentially significant impacts.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to public services and utilities are addressed in this analysis:

- Temporary blockage of emergency access routes during Project construction.
- The creation of a new solid waste stream and related impacts on existing landfill capacity.
- Project-related waste water generation and related impacts on waste water treatment facilities.

Impact Assessment Methodology

Significance Criteria

A significant impact to Public Services and Utilities would occur under any of the following conditions:

Criterion PSU-1: The Project would increase the demand for public services that cannot be readily met by existing public service providers and facilities.

Criterion PSU-2: Project construction or operation could restrict or interfere with emergency response vehicle access or aircraft response services.

Criterion PSU-3: The Project would substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater.

Criterion PSU-4: The Project would require new or expanded water supply resources or entitlements.

Criterion PSU-5: The Project would conflict with federal, State, and local statutes and regulations related to solid waste.

Criterion PSU-6: The Project would cause utility system disruptions or would cause a co-location accident through the crossing or shared location with another utility line.

Mitigation Planning

General Practices (GPs) are intended to reduce impacts associated with the Proposed Action and Alternatives. Table 2-15 in Chapter 2 lists GPs identified by LADWP.

Mitigation measures are designed to reduce impacts associated with the BRRTP. Specific mitigation measures are recommended when it is determined that Project design and/or GPs would not fully mitigate an impact. The following mitigation measure applies to public services and utilities systems, on a case-by-case basis, where appropriate.

TABLE 4.2.6-1. MITIGATION MEASURES – PUBLIC SERVICES AND UTILITIES SYSTEMS

Mitigation Measure	Description
PSU-1	**Recycle Solid Construction Waste.** LADWP contractors shall recycle a portion of the solid waste generated during Project construction activities to the extent feasible. The quantity of Project waste that is recycled shall aide local jurisdictions in meeting and/or exceeding Assembly Bill 939 standards.

Summary of Impact Analysis Results

Baseline conditions for the Project area are presented in Chapter 3. These baseline conditions were evaluated based on their potential to be affected by construction, operation, maintenance, and decommissioning activities related to the proposed BRRTP and Alternatives, described in Chapter 2.

Table 4.2.6-2 below summarizes impacts to public services and utilities systems that are relevant to the Proposed Action and Alternatives, based on the significance criteria discussed above. Detailed discussions of each impact and the specific location where each is identified are presented below.

TABLE 4.2.6-2. IMPACTS IDENTIFIED – PUBLIC SERVICES AND UTILITIES SYSTEMS

Impact Number	Description
PSU-1	Project construction could temporarily increase the demand of fire protection and emergency medical services.
PSU-2	Project operation could increase the demand for fire protection and emergency medical services.
PSU-3	Project construction activities could temporarily increase the demand for police protection services.
PSU-4	Project construction activities could temporarily increase the demand for schools, parks, or other public facilities.
PSU-5	Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times.
PSU-6	Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services.
PSU-7	Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption.
PSU-8	Additional wastewater would be generated during Project construction and operation.
PSU-9	Additional solid waste would be generated during Project construction and operation.
PSU-10	The Project would conflict with applicable statutes and standards related to solid waste.
PSU-11	Project construction would temporarily disrupt the flow of services provided by underground or overhead utilities.

No Action Alternative

Under the No Action Alternative, neither the BRRTP nor the action Alternatives identified in Chapter 2 would be constructed, and existing conditions in the Project area would persist.

If the BRRTP or a similar project were not constructed, disruptions in reliable electrical service could result in indirect impacts to public services and utilities. For example, traffic signals that depend on power to regulate the flow of traffic would be rendered inoperable during an electricity outage, and subsequent traffic could delay the response time of emergency response providers. Depending on the frequency, duration, and extent of these service interruptions, impacts associated with the No Action Alternative could be significant and cumulatively considerable.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

Construction activities associated with this Project component would consist of stringing a second circuit onto existing Castaic to Olive 230 kV transmission line structures between the proposed Haskell Canyon Switching Station and the Castaic Power Plant.

During stringing of the new 230 kV circuit, the following impacts could potentially occur, but would be less than significant or mitigated to a less-than-significant level:

The presence of construction vehicles and equipment could generate sparks that may result in wildfire; however, LADWP already drives vehicles and uses equipment in the ROW for periodic maintenance of the existing Castaic to Olive 230 kV transmission line. After installation, maintenance operations would continue to occur as they have in the past. LADWP would prevent or minimize the likelihood of wildfire to occur and the need for fire suppression and emergency response services by implementing mitigation measures AIR-2a, AIR-2d, and F-2a.

Installation of the new 230 kV circuit may require the temporary involvement of local police units in coordinating traffic and temporary lane closure during conductor stringing activities; however, these activities would not generate a permanent need for additional law enforcement services in the area, resulting in a less than significant impact.

During installation activities, a small amount of potable water would be required for worker drinking and sanitation purposes, and recycled water would be required to suppress fugitive dust in the ROW. The quantity of water required for these purposes would be relatively small compared to water resources available in the local permitted facilities and would not exhaust the water supply available in the area.

A minute amount of additional wastewater would be generated during installation of the 230 kV circuit, resulting from worker use of portable toilets at the sites or in the Project staging areas.

Sanitation waste from the portable toilets would be emptied into septic tanks or municipal sewage systems, and would not strain the service capacities of local wastewater treatment facilities in the area.

Activities associated with installation of the new 230 kV circuit would generate a small amount of solid waste. Scrap materials, replacement parts, and other debris would be recycled to the maximum extent practicable. Unsalvageable material would be disposed of at facilities authorized to accept such waste in accordance with applicable laws and regulations. While mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of waste diverted from disposal at a landfill.

Reconductoring of the BR-RIN Transmission Line
Reconductoring of the existing BR-RIN 230 kV transmission line would require surveying of the ROW, rehabilitation of existing access and spur roads, clearing of the ROW, conductor installation, ground rod installation, and cleanup. The existing line would be removed and used to string the new conductor. Some existing transmission structures would need to be modified or replaced, and some of the foundations reinforced, to support the weight of new heavier conductors. After the existing line is reconductored, operation and maintenance activities would continue to occur as they do under existing conditions.

The following impacts could potentially occur as a result of reconductoring the BR-RIN transmission line, but would be less than significant or mitigated to a less-than-significant level:

Fire protection service providers serving the BR-RIN and the proposed transmission line would be identical between the Barren Ridge Switching Station and Haskell Canyon. As with construction of the proposed transmission line, workers could become injured on the job-site. Reconductoring activities could temporarily increase the demand for fire protection and emergency medical services. Such activities would pose a moderate to low level of wildfire risk for approximately 41 miles of the route and a high level of wildfire risk for approximately 2 miles of the route. However, implementation of mitigation measures AIR-2a, AIR-2d, and GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would reduce the need for short-term provisions of fire or emergency response services.

Police protection, water, wastewater, storm drainage, and solid waste service providers serving the BR-RIN and the proposed transmission line would be identical between the Barren Ridge Switching Station and Haskell Canyon. As such, construction, operation, maintenance, and decommissioning impacts associated with the reconductoring of the BR-RIN would be similar to those identified for the Proposed Action, which were determined to be less than significant, and did not require mitigation.

LADWP would implement PSU-1 to minimize the BR-RIN line's construction waste impacts, and to ensure that the maximum amounts of construction waste materials are diverted from disposal at a landfill.

New Haskell Canyon Switching Station / Expansion of Barren Ridge Switching Station
LADWP proposes an expansion of the Barren Ridge Switching Station on a 5.6-acre vacant site to the east side of the existing facility. In addition, LADWP proposes the construction of a new

switching station in Haskell Canyon, on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines. The footprint for the proposed Haskell Canyon Switching Station site would occupy a currently vacant 2.7-acre area.

The following impacts could potentially occur as a result of the Project switching stations, but would be less than significant or mitigated to less than significant:

Switching station construction could temporarily increase the demand for fire protection and emergency medical services. The expansion area for the Barren Ridge Switching Station consists of dry vacant desert with a minimal fire history, and construction at this location is not expected to pose a significant fire risk. The Haskell Canyon Switching Station would pose a moderate level of wildfire risk due to surrounding vegetative fuels that could be ignited during construction activities. However, implementation of mitigation measures AIR-2a, AIR-2dand GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would ensure a minimal fire risk at the switching station sites and would reduce the need for short-term provisions of fire or emergency response services.

Switching station operation could increase the demand for fire protection and emergency medical services. Electrical switching stations typically contain fuel and ignition sources that may present a fire hazard during facility operation, potentially requiring the need for fire suppression services. The main components of a switching station that pose a fire hazard are the electrical cables, which provide sources of fuel and ignition. In addition, above-ground fuel tanks containing flammable liquids (e.g., gasoline) may be stored on-site and could present a fire hazard if exposed to sources of ignition. As previously mentioned, the Haskell Canyon Switching Station site contains vegetative fuels that could potentially be ignited during maintenance operations. However, implementation of mitigation measure F-2a and GP-4 would minimize the potential for fires or worker injury to occur at the switching station facility sites, ensuring that there would not be an increased need for additional provisions of fire or emergency response services.

During construction of the new Haskell Canyon Switching Station or expansion of the existing Barren Ridge Switching Station, law enforcement may be required to coordinate temporary roadway closures, or to prevent theft and/or vandalism of Project equipment and materials. Standard precautionary measures, such as securing equipment when left unattended, would be implemented to minimize potential theft and vandalism at the Project sites.

Project construction and operation would temporarily increase water consumption in the area. During BRRTP switching station construction, potable water would be required for worker drinking and sanitation purposes and recycled water would be required to suppress fugitive dust in the excavation areas. During operation of these facilities, a minimal amount of water may be required for emergency procedures (e.g., fire suppression). The quantity of water required for this purpose would depend on local environmental conditions, such as weather, but would be relatively small compared to water resources available in the local permitted facilities. The water demands for the switching stations would not exhaust the water supply available at local permitted facilities.

Additional wastewater would be generated during Project construction and operation. Wastewater generated during construction of the switching station facilities would result from worker use of portable toilets at the sites or in the Project staging areas. Sanitation waste from the portable toilets would be emptied into septic tanks or municipal sewage systems, and the quantity of wastewater produced would not strain the service capacities of local wastewater treatment facilities in the region.

Construction and maintenance of the BRRTP switching stations would generate a small amount of solid waste. Scrap materials from foundations, electrical equipment, replacement parts and other debris would be recycled to the maximum extent practicable. Unsalvageable material would be disposed of at facilities authorized to accept such waste in accordance with applicable laws and regulations. While mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of switching station waste diverted from disposal at a landfill.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

The Project would increase the demand for public services that cannot be readily met by existing public service providers and facilities (Criterion PSU-1)

Impact PSU-1: Project construction could temporarily increase the demand for fire protection and emergency medical services.

The Alternative 1 transmission line route would contain less mileage ranked as High for avoidance due to fire risk and fire severity potential relative to the Proposed Action (see the BRRTP Wildfire and Fuels Technical Report in Volume III). Therefore, Alternative 1 would pose a more benign fire risk, and would be less likely to burden fire protection service providers during its construction phase.

As described for the Alternative 2 transmission line below, construction-related injuries could occur, requiring emergency medical attention. Temporary fire hazard impacts associated with sources of human influenced ignition (e.g., vehicle or equipment sparks, cigarette smoking) would be similar to the Alternative 2 transmission line, and could occur within or adjacent to the ROW or staging areas. In addition, heavy lift helicopters carrying flammable materials, such as fuels, would be used for transmission line construction activities (i.e., tower and material transport, wire-stringing) along an 8.4-mile stretch of the Alternative 1 transmission line in a remote area of the ANF. A significant impact would result if firefighting resources would need to be brought in from other critical areas to control or extinguish fire during construction of the Alternative 1 transmission line in the ANF.

LADWP would implement GP-20 (Refueling of Helicopters Utilized for Project Construction) as part of the Project as well as mitigation measures AIR-2d (Limit Construction Vehicle Idling), AIR-2a (Watering of the Site for Fugitive Dust Control) and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) to reduce the potential for accidental ignition and unnecessary burden on firefighters. LADWP would also implement GP-4 (Health and Safety Plan) as part of the Project to minimize the potential for construction-related injuries and the need for emergency medical services.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, incorporation of GP-20 and GP-4 and implementation of mitigation measures AIR-2a, AIR-2d, and, and the mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would ensure a minimal fire risk, and would reduce the need for short-term provisions of fire or emergency response services. Impact PSU-1 would be less than significant.

Impact PSU-2: Project operation could increase the demand for fire protection and emergency medical services.

The Alternative 1 transmission line would present a lower wildfire risk relative to the Alternative 2 transmission line (see the BRRTP Wildfire and Fuels Technical Report in Volume III), and would be less likely to burden fire protection service providers during its operation phase.

A portion of the Alternative 1 transmission line route would be in a remote area of the ANF where operation of the new transmission line may increase the likelihood of a wildfire and the demand for aerial firefighting services. Tall tree branches would be pruned periodically within the ROW to minimize vegetative fuels, and flammable materials that present a potential fire hazard would be restricted from the ROW.

As with the Alternative 2 transmission line, development and implementation of a Fire Prevention and Vegetation Management Plan, and implementation of mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would reduce wildfire incidences, and ensure that no reallocation of resources from other critical firefighting areas would be required to serve the Project.

The potential for worker injury and the need for emergency medical services during Project maintenance operations would be minimized through implementation of GP-4 (Health and Safety Plan).

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Project. Impact PSU-2 would be reduced to less than significant.

Impact PSU-3: Project construction activities could temporarily increase the demand for police protection services.

Construction of the Alternative 1 transmission line could result in a temporary increase in the demand for law enforcement services in Kern and Los Angeles counties and in the ANF. The aid of local policing units would be required for coordination of temporary roadway closures during construction activities, particularly in the ANF during helicopter transport of transmission tower steel members.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, Impact PSU-3 would be less than significant.

Impact PSU-4: Project construction activities could temporarily increase the demand for schools, parks, or other public facilities.

Over the two-year construction period, local workers residing in the vicinity of the Project would commute to the job-site to construct the Alternative 1 transmission line. Therefore, construction of this transmission line would not be associated with a substantial increase in the size of the local population, or an increased need for public facilities (e.g., schools, parks) to serve a new population.

CEQA Significance

There would be no long-term permanent impacts to existing schools, parks or other public facilities due to a population increase resulting from construction of Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives. The construction of new or augmentation of existing schools, parks, or other public facilities would not be required; Impact PSU-4 would not result.

Project construction or operation could restrict or interfere with emergency response vehicle access or aircraft response services (Criterion PSU-2)

Impact PSU-5: Temporary or single lane closure during Project construction would interfere with emergency vehicle response times.

Construction of the Alternative 1 transmission line would require the temporary closure of select roadways during helicopter transport of transmission tower steel members, which could hinder the regular flow of traffic. In some instances, the resulting congestion could restrict access or block emergency response pathways used by emergency responders (i.e., police, fire, ambulance, paramedic), delaying response times.

LADWP would implement GP-2 (Traffic Control Plan) and GP-55 (Notify Local Emergency Service Providers of Roadway Closure) as part of the Project to accommodate emergency vehicle passage, and emergency service agencies (fire district, police, ambulance and paramedic) would be notified at least one month before each closure by LADWP.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GP-2 and GP-55 would minimize traffic related to roadway closures during construction of Alternative 1 and would reduce the potential for a delay in emergency response times. Impact PSU-5 would be less than significant with no mitigation required.

Impact PSU-6: Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services.

Within the ANF, 8.4 miles of the Alternative 1 transmission line route would require the use of helicopters for tower construction activities. Construction would occur across areas with steep terrain and limited vehicular access. In these remote areas, aerial firefighting tactics are the preferred method of initial attack to extinguish wildfires.

During Project operation, a portion of the new line would stand parallel and at a different level relative to other transmission lines within the same utility corridor in the ANF; this could further impede emergency aerial fire suppression activities. Firefighting aircraft would be forced to fly at a higher altitude to avoid collision with new lines and structures, potentially decreasing firefighting efficiency during aerial water drops.

To avoid collision with firefighting helicopters during an aerial attack, BRRTP construction helicopters would adhere to all applicable FAA regulations regarding flight restrictions in designated areas of the ANF. As part of the Project, LADWP would implement GP-21 (Helicopters Utilized for Construction Shall Cease Activities in the Event of a Fire in the ANF) and mitigation measure F-2a (Fire Prevention and Vegetation Management Plan) to minimize the potential for interference with fire protection service providers. As appropriate, aerial warning signage and lighting would be installed on the towers and/or conductors to warn pilots of the new lines' presence, and the ANF Firefighting Safety Hazard maps would be updated for distribution to relevant agencies upon completion of construction to mitigate for aerial firefighting hazards.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GPs 21 and mitigation measure F-2a would reduce the potential for interference with emergency response and fire protection service providers during construction and operation. Impact PSU-6 would be less than significant. No additional mitigation is required.

The Project would substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater (Criterion PSU-3)

Impact PSU-7: Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption.

Compared to the Alternative 2 transmission line, the water needs for construction of the Alternative 1 transmission line would be slightly greater due to the longer length of the route, and would be required for the same purposes (i.e., drinking and sanitation, fugitive dust suppression). The amount of water required for these activities would not hinder the ability of local water purveyors to adequately supply water to the area.

CEQA Significance

The water needs for Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would not strain existing water service capacities, requiring the construction of new or expansion of existing water facilities or entitlements; Impact PSU-7 would be less than significant.

Impact PSU-8: Additional wastewater would be generated during Project construction and operation.

Construction of the Alternative 1 transmission line would result in Impact PSU-8, due to worker use of portable toilets at the Project staging areas. Sanitation waste from the portable toilets would be emptied into septic tanks or municipal sewage systems, and the quantity of wastewater produced would not strain the service capacities of local wastewater treatment facilities in the Project area.

CEQA Significance

Wastewater generated as a result of Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would be minimal, and would not affect the local wastewater treatment provider's ability to adequately serve the Project in addition to existing commitments. Impact PSU-8 would be less than significant.

Impact PSU-9: Additional solid waste would be generated during Project construction and operation.

The Alternative 1 transmission line route would be 22.5 miles longer than the Alternative 2 transmission line; however, the volume of solid waste generated by construction of this Alternative is not expected to be substantially greater and would not surpass capacities of local landfills in the region. While mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from disposal at a landfill.

CEQA Significance

Although the quantity of solid waste produced by Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, construction activities would not exceed the capacity of local landfills, implementation of PSU-1 is recommended to ensure that the maximum amount of waste material is diverted from landfill disposal. Impact PSU-9 would be less than significant.

The Project would require new or expanded water supply resources or entitlements (Criterion PSU-4)

The Project's water needs during construction, operation, maintenance, and decommissioning of the Alternative 1 transmission line would be adequately served by local water purveyors and systems; new or expanded water entitlements and resources would not be required. A small amount of water would be needed for fugitive dust suppression during ground disturbing activities, and potable water would be needed for drinking and sanitation purposes.

CEQA Significance

Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would not require new or expanded water supply resources or entitlements. No impact would result.

The Project would conflict with federal, state, and local statutes and regulations related to solid waste (Criterion PSU-5)

Impact PSU-10: The Project would conflict with applicable statutes and standards related to solid waste.

The quantity of solid waste produced by construction, operation, maintenance, and decommissioning of the Alternative 1 transmission line is not anticipated to exceed the capacity of local landfills, and a portion of the solid waste material would be diverted from landfill disposal according to the minimum standards established by the Integrated Waste Management Act of 1989 and Assembly Bill 939.

Implementation of PSU-1 is recommended to ensure that the maximum quantity of Project waste is diverted from landfill disposal.

CEQA Significance

With implementation of PSU-1, Impact PSU-10 would not result from construction or operation of Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives.

The Project would cause utility system disruptions or would cause a co-location accident through the crossing or shared location with another utility line (Criterion PSU-6)

Impact PSU-11: Project construction would temporarily disrupt the flow of services provided by underground and overhead utilities.

As with the Alternative 2 transmission line, construction of the Alternative 1 transmission line would occur close to existing above- and below-ground utilities. While no planned utility service outages are anticipated, ground and helicopter construction methods used for the Alternative 1 transmission line could result in a co-location accident with existing utilities.

The location of existing utilities would be identified by LADWP along the Project alignment before construction, and potential co-location accidents would be avoided, where feasible. In accordance with California State law, LADWP would notify the Underground Service Alert at least two working days before any Project excavation activities. Surveys and manual probing would also be conducted by LADWP along the Alternative 1 transmission line alignment before powered-equipment drilling and excavation activities. Probing activities would help to determine the exact placement of pole and tower foundations along the route, ensuring the avoidance of a co-location accident with existing underground utilities.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, notification of the Underground Service Alert, surveys, and probing activities would be conducted in accordance with State law before excavation activities and would help to avoid potential interference with existing utility systems. Impact PSU-11 would be less than significant.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

The Project would increase the demand for public services that cannot be readily met by existing public service providers and facilities (Criterion PSU-1)

Impact PSU-1: Project construction could temporarily increase the demand for fire protection and emergency medical services.

Construction of the Alternative 2 transmission line could temporarily increase the demand on fire protection and emergency response service providers identified in Section 3.2.6. As described in Section 4.2.11 (Wildfire and Fuels), fire suppression services would be required during construction of the Project if sparks generated by idling construction vehicles, welding equipment, power tools, or other sources of human influenced ignition (e.g., cigarette smoking) were to accidentally ignite dry and overgrown vegetation in or adjacent to the Project ROW or staging areas, resulting in a wildfire.

Along the Alternative 2 transmission line alignment, the majority of wildfire risk posed by Project construction would occur within the ANF, which has a considerable history of wildfires and serves as a wildland-urban interface to unincorporated communities on the fringe of the forest boundary (Green Valley, Elizabeth Lake, and Lake Hughes). These unincorporated communities are particularly susceptible to fire under conditions of wind, and would be vulnerable to ANF wildfires due to their proximate location. A significant impact would result if firefighting resources would need to be drawn from other critical areas to control or extinguish fire resulting from construction of the Alternative 2 transmission line in the ANF.

AIR-2d would limit the idling of construction vehicles to 10 minutes or less, and small gas-operated machinery would be turned off when not in use, minimizing fire potential and unnecessary burden on firefighters. AIR-2a (Watering of the Site for Fugitive Dust Control) and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would be implemented to reduce the potential for accidental ignition in hazardous areas and to ensure that additional firefighting provisions would not need to be drawn from other critical firefighting areas. In addition, to minimize the potential for construction-related injuries and the need for emergency medical services, LADWP would implement GP-4 (Health and Safety Plan) as part of the Proposed Action.

CEQA Significance

While construction of Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, could temporarily increase the demand for fire suppression services in the ANF, implementation of mitigation measures AIR-2a, AIR-2d, and GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would minimize the potential for Project-related fire and the need for additional provisions of firefighting or emergency response services during construction. Impact PSU-1 would be adverse but less than significant.

Impact PSU-2: Project operation could increase the demand for fire protection and emergency medical services.

Increased demands on fire protection and emergency response service providers would occur if operation of the Alternative 2 transmission line would increase the risk of wildfire. As described in Section 4.2.11 (Wildfire and Fuels), incidences of fire could occur during Project operation if tree limbs or other structures, such as collapsed wooden transmission poles, were to come into contact with a live phase conducting wire. In addition, construction personnel could require emergency medical assistance if they were to become injured in the field during routine maintenance operations.

To minimize fire potential and unnecessary burden on firefighters, tall tree branches within the ROW would be trimmed on a periodic basis to minimize vegetative fuels, and flammable materials that may present a fire hazard and danger to the public would be restricted from the ROW. Best management practices, such as the development and implementation of a Multi-Agency Construction and Maintenance Fire Prevention Plan, and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would be implemented to reduce the potential for accidental ignition in hazardous areas, and to ensure that reallocation of resources from other critical firefighting areas would not be required to serve the Project.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Project. Impact PSU-2 would be reduced to less than significant.

Impact PSU-3: Project construction activities could temporarily increase the demand for police protection services.

Construction of the Alternative 2 transmission line may require minimal use of local law enforcement agencies in Kern and Los Angeles Counties and in the ANF. In some areas, the Project would require the installation of transmission towers adjacent to existing road rights-of-way. During this time, the placement of safety barriers and the temporary or single-lane closure of roadways may be required during the transport of oversized equipment and stringing of the conducting wires. The aid of local policing units is typically solicited for coordination of these activities.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, use of police services would be associated with temporary construction-related conditions; Impact PSU-3 would not be significant.

Impact PSU-4: Project construction activities could temporarily increase the demand for schools, parks, or other public facilities.

An increase in the demand for public facilities, such as schools, parks, or libraries, is typically induced by a substantial increase in the size of the local population. Construction of the BRRTP would take approximately two years, and 447 total workers, with 173 workers at the peak of construction. During the temporary construction period, workers residing in the vicinity of the Project would commute to the job-site from surrounding communities. Therefore, construction of the Project would not introduce new residents to the area that would exceed the performance objectives of existing schools, parks or other public facilities.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, the construction of new or augmentation of existing schools, parks, or other public facilities would not be required to serve the Project; no associated impacts would result.

Project construction or operation could restrict or interfere with emergency response vehicle access or aircraft response services (Criterion PSU-2)

Impact PSU-5: Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times.

Portions of the Alternative 2 transmission line would directly cross or lie adjacent to road rights-of-way. Some of these roadways may be used for emergency vehicle passage (i.e., police, fire, ambulance, paramedic), or by civilians during an emergency evacuation. The Alternative 2 transmission line would require the temporary single-lane closure of select roadways (refer to Section 4.2.8, Traffic and Transportation) during the transport of oversized equipment loads or stringing of conducting wires. In an emergency situation (e.g., wildfire), the presence of heavy construction equipment and machinery could compromise access on major roadways, limiting evacuation protocols or emergency vehicle access.

To avoid interference with emergency response and evacuation pathways, LADWP would implement GP-2 (Traffic Control Plan) as part of the Project. The Traffic Control Plan (TCP) would identify the locations of all roads scheduled for temporary closure as well as feasible diversion routes. In accordance with GP-55 (Notify Local Emergency Service Providers of Roadway Closure), closure activities would be coordinated with relevant agencies (i.e., police, fire, ambulance, and paramedic services) at least one month before each closure event, and would be scheduled to take place during off-peak commute hours. In an emergency situation, construction crews would immediately cease work to accommodate emergency vehicles passing through the area.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GP-2 and GP-55 would include provisions to accommodate emergency vehicle passage, and emergency responders would be notified at least one month in advance of each closure by LADWP to avoid a delay in response times. Impact PSU-5 would be less than significant.

Impact PSU-6: Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services.

Within the ANF, helicopters and other emergency response aircraft are utilized for fire suppression as well as search and rescue operations. In remote areas with mountainous terrain and limited vehicular access, aircraft are often the fastest resources to reach and extinguish wildfires or to respond to other emergency situations. Aerial attacks are usually conducted in the initial stages of fire-fighting, when fire retardant/water drops are the most effective and ground attacks are slow to commence or are restricted from access due to rugged terrain.

The presence of a new overhead transmission line, particularly along ridge tops, could create an obstruction to emergency aerial fire suppression activities. Since towers and conducting wires are hard to see under conditions of smoke and reduced visibility, aircraft would be forced to fly at a higher altitude to avoid collision with new transmission infrastructure. Typically, an increase in the altitude during a fire retardant/water aerial drop is correlated with a decrease in target accuracy and firefighting efficiency.

Between the unincorporated communities of Elizabeth Lake and Green Valley and parallel to San Francisquito Road, the Multi-Circuit Mitigation portion of the Proposed Action would traverse an exposed ridgeline. Within this one mile area, the Alternative 2 transmission line's 170-foot-tall multi-circuit towers would replace existing 90-foot-tall BR-RIN towers and could create a higher obstruction to aerial firefighting activities.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, and during operation, the new BRRTP Multi-Circuit Mitigation transmission towers could stand 170 feet in height in some locations depending on final design, approximately 80 feet taller than existing BR-RIN transmission line towers. This height difference would increase the required altitude for aircraft used in an aerial firefighting attack, and could potentially decrease the efficiency of these emergency operations. However, with the presence of existing transmission lines within the existing corridor, existing aerial firefighting already avoids the immediate area. Additionally, if required by FAA, LADWP would ensure the installation of appropriate aerial warning signage and lighting on the towers and/or conductors to warn pilots of flight path obstructions where the route would traverse the exposed ridgeline. Additionally, the ANF Firefighting Safety Hazard maps would be updated and distributed to relevant agencies upon completion of construction to minimize the potential for aerial firefighting hazards. Consequently, Impact PSU-6 would be less than significant.

The Project would substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater (Criterion PSU-3)

Impact PSU-7. Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption.

Project construction crews would require a small amount of potable water for drinking and sanitation purposes, and recycled water would be required to manage fugitive dust generated by Project excavation activities. The quantity of water required to suppress fugitive dust would be influenced by site-specific factors such as local weather conditions, soil cover in excavated areas, and the quantity/length of Project access roads. In addition, these temporary water demands would occur over the course of the two-year construction period along the Alternative 2 transmission line 60.7-mile ROW.

CEQA Significance

Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would temporarily increase the need for water along the proposed ROW. Water demand, however, would not exhaust the water supply available at local permitted facilities, and would represent a minute quantity relative to water resources available in the region. Impact PSU-7 would be less than significant.

Impact PSU-8. Additional wastewater would be generated during Project construction and operation.

Water utilized during Project construction for dust suppression purposes would evaporate into the surrounding air or percolate into the ground, and would not require disposal or treatment at a wastewater facility.

Project construction would generate a small amount of wastewater resulting from the temporary use of portable toilet facilities at the Project staging areas. Since the size of the construction workforce would consist of 173 workers per day, the wastewater produced during Project construction would not significantly affect the service capacities of local wastewater treatment facilities serving the BRRTP area. Sanitation waste would be emptied from portable toilets into septic tanks or municipal sewage systems, and no other wastewater is anticipated to result from Project construction or operation.

CEQA Significance

Wastewater treatment demands associated Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would not hinder the local wastewater treatment provider's ability to serve the BRRTP in addition to existing commitments. The construction of new or expansion of existing wastewater collection or treatment facilities would not be necessary. Impacts would be less than significant.

Impact PSU-9. Additional solid waste would be generated during Project construction and operation.

The Project would generate construction debris including concrete fragments, asphalt, scrap metal, soil, and vegetative material. In addition, operation and maintenance of the Project's switching stations may generate a small amount of solid waste, consisting of broken equipment and packing materials associated with replacement parts.

LADWP would recycle a portion of Project-related solid waste to assist local jurisdictions in meeting their solid waste diversion goals in accordance with the Integrated Waste Management Act of 1989. Solid waste that cannot be diverted or reused would be removed from the site and disposed of at landfills serving the BRRTP area (see Chapter 3,Table 3.2.6-2). Excess soil remaining from tower foundation excavation would be backfilled in the same area, where feasible. Municipal Solid Waste and waste containing large amounts of organic material (e.g., cardboard boxes, soil, and vegetative material) would be transported to sanitary landfill facilities, and inert solid waste (e.g., asphalt, concrete fragments, and scrap metal) would be hauled to unclassified landfill facilities. Project debris containing hazardous material would be picked up separately and transported by a licensed hauler to a disposal facility permitted to accept such waste.

CEQA Significance

Solid waste would be generated during construction of Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, over the course of the two-year construction period. A negligible amount of debris could potentially result from operation and maintenance of the Proposed Action. Project waste would represent a fraction of the total landfill capacity available in the region, and is not anticipated to exceed the capacity of local landfills identified in Chapter 3, Table 3.2.6-2. Although impacts on waste management facilities would not be significant and mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from landfill disposal.

The Project would require new or expanded water supply resources or entitlements (Criterion PSU-4)

Suppliers that receive annual allocations from the State Water Project and provide water to the BRRTP area are identified in Chapter 3. As discussed in Impact PSU-7, recycled water would be imported to minimize fugitive dust associated with ground disturbing construction activities, and potable water would be required for drinking purposes.

CEQA Significance

Water requirements for Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would be small relative to the quantities available in the BRRTP area, and would not surpass existing water service capacities. Therefore, no new or expanded water facilities or entitlements would be needed. No impacts associated with such construction would result.

The Project would conflict with federal, state, and local statutes and regulations related to solid waste (Criterion PSU-5)

Impact PSU-10: The Project would conflict with applicable statutes and standards related to solid waste.

As described in Impact PSU-8 (above), construction and operation of the Alternative 2 transmission line would generate a small amount of solid waste. Construction waste that could not be diverted would be picked up and transported to an appropriate landfill in the region permitted to accept the waste. Chapter 3 identifies solid waste landfills that may serve the Project area, including their remaining capacities (see Table 3.2.6-2). Since Project construction waste would represent only a small fraction of the total landfill capacity available, landfills in the area would have sufficient capacity to accept Project waste.

Local governments within the Project area have adopted a Source Reduction Recycling Element that addresses solid waste diversion goals, recycling programs, and practical methods for achieving solid waste diversion objectives in compliance with AB 939 standards. As indicated in Appendix D of this Final EIS/EIR, local jurisdictions within the Project area met, surpassed, or were very near achieving the minimum requirements of AB 939 between 2005 and 2006.

Implementation of PSU-1 is recommended to ensure that the maximum amount of Project waste materials would be diverted from disposal at a landfill.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of PSU-1 would ensure compliance with applicable statutes and standards related to solid waste; Impact PSU-10 would not result.

Project construction would cause utility system disruptions or would cause a co-location accident through the crossing or shared location with another utility line (Criterion PSU-6)

Impact PSU-11: Project construction would temporarily disrupt the flow of services provided by underground or overhead utilities.

LADWP would install and utilize a 7.5-mile long temporary bypass transmission line along San Francisquito Road to minimize disruption of electrical service along the existing BR-RIN transmission line during construction of the BRRTP Three-Circuit Towers. While no electrical service outages are planned, construction of the Proposed Action could temporarily disrupt the flow of services provided by other underground or overhead utility facilities. This could occur if overhead power, telephone, or cable lines are crossed by the BRRTP ROW. This could also occur if subsurface water, sewer, or natural gas pipelines are accidentally encountered below Project easements during Project grading and the boring of holes for transmission tower/pole installation.

To avoid a co-location accident with the BRRTP, the location of existing utilities would be identified for avoidance before construction. LADWP would notify the Underground Service Alert at least two working days before any Project excavation activities, in accordance with the requirements of California Government Code Section 4216-4216.9, "Protection of Underground Infrastructure." This would facilitate the identification of existing underground utilities within 1,000 feet of the BRRTP. Surveys and manual probing would also be conducted by LADWP along Project alignments and sites before powered-equipment drilling and excavation activities. Probing activities would help to determine the exact placement of pole and tower foundations along the alignment, eliminating potential interference with existing utility systems.

CEQA Significance

Under Alternative 2, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, notification of the Underground Service Alert, surveys, and manual probing of the area would be done before construction of the Proposed Action in accordance with State law requirements, the risk of an accidental co-location accident with existing utility lines and an associated temporary service outage would be minimal. Consequently, Impact PSU-11 would be less than significant.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

Direct and Indirect Effects Analysis

The Project would increase the demand for public services that cannot be readily met by existing public service providers and facilities (Criterion PSU-1)

Impact PSU-1: Project construction could temporarily increase the demand for fire protection and emergency medical services.

The Alternative 2a transmission line route contains more mileage ranked as High for avoidance due to fire risk and fire severity potential, relative to the Proposed Action (see the BRRTP Wildfire and Fuels Technical Report in Volume III). Therefore, the Alternative 2a transmission line presents a higher risk of wildfire, and is more likely to burden fire protection service providers during its construction phase.

As with the Alternative 2 transmission line, worker injury on the job-site could require emergency medical attention, and wildfires could result if sources of human-influenced ignition (e.g., vehicle or equipment sparks, cigarette smoking) were to accidentally ignite dry and overgrown vegetation in or adjacent to the Project ROW or staging areas. In addition, heavy lift helicopters would be used for transmission line construction activities (i.e., tower and material transport, wire-stringing) along an approximately seven-mile stretch of the Alternative 2a transmission line in the ANF. Flammable fuel loads (i.e., petroleum products) and other ignitable materials used during the operation or refueling of Project helicopters could introduce additional wildfire risks that would need to be managed during construction of this Alternative. As with the Alternative 2 transmission line, a significant impact would result if firefighting resources would need to be brought in from other critical areas to control or extinguish fire during construction of the Alternative 2a transmission line in the ANF.

To reduce the potential for accidental ignition and unnecessary burden on firefighters, LADWP would implement AIR-2d (Limit Construction Vehicle Idling), AIR-2a (Watering of the Site for Fugitive Dust Control), and GP-20 (Refueling of Helicopters Utilized for Project Construction) as well as mitigation measures identified in Section 4.2.11 (Wildfire and Fuels). LADWP would also implement GP-4 (Health and Safety Plan) as part of the Project to minimize the potential for construction-related injuries and the need for emergency medical services.

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of mitigation measures AIR-2a, AIR-2d, and GP-20 and GP-4, as well as mitigation measures identified in Section 4.2.11 (Wildfire and Fuels), would ensure a minimal fire risk by minimizing human-influenced ignition sources during construction and would reduce the need for additional short-term provisions of fire or emergency response services. Impact PSU-1 would be less than significant.

Impact PSU-2: Project operation could increase the demand for fire protection and emergency medical services.

The Alternative 2a transmission line route contains more mileage ranked as High for avoidance due to fire risk and fire severity potential (see the BRRTP Wildfire and Fuels Technical Report in Volume III). Therefore, the Alternative 2a transmission line would present a higher risk of wildfire relative to the Alternative 2 transmission line, and would be more likely to burden fire protection service providers during its operation phase.

Tall tree branches would be pruned periodically within the ROW to minimize vegetative fuels, and flammable materials that present a potential fire hazard would be restricted from the ROW. As with the Alternative 2 transmission line, development and implementation of a Multi-Agency Construction and Maintenance Fire Prevention Plan, and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would be implemented to reduce wildfire incidences, and to ensure that reallocation of resources from other critical firefighting areas would not be required to serve the Project.

The potential for worker injury and the need for emergency medical services during Project maintenance operations would be minimized through implementation of GP-4 (Health and Safety Plan).

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Project. Impact PSU-2 would be reduced to less than significant.

Impact PSU-3: Project construction activities could temporarily increase the demand for police protection services.

Construction of the Alternative 2a transmission line may require minimal use of local law enforcement agencies in Kern and Los Angeles counties, and in the ANF. The aid of local policing units would be required for coordination of temporary roadway closures during Project construction, particularly during helicopter transport of transmission tower steel members.

CEQA Significance

Under Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, Impact PSU-3 would be less than significant.

Impact PSU-4: Project construction activities could temporarily increase the demand for schools, parks, or other public facilities.

Over the two-year construction period, local workers residing in the vicinity of the Project would commute to the job-site to construct the Alternative 2a transmission line. The number of workers required to construct this transmission line would be approximately the same as the Alternative 2 transmission line. Therefore, the Alternative 2a transmission line would not introduce new permanent populations to the area that would result in a long-term increase in the demand for schools, parks, or other public facilities.

CEQA Significance

Under Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, the construction of new or augmentation of existing schools, parks, or other public facilities would not be required to serve Alternative 2a; no associated impacts would result.

Project construction or operation could restrict or interfere with emergency response vehicle access or aircraft response services (Criterion PSU-2)

Impact PSU-5: Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times.

Construction of the Alternative 2a transmission line would require the temporary closure of select roadways in the ANF during helicopter transport of transmission tower steel members, which could hinder the regular flow of traffic. In some instances, the resulting congestion could restrict access or block emergency response pathways used for emergency vehicle passage, delaying response times.

LADWP would implement GP-2 (Traffic Control Plan) and GP-55 (Notify Local Emergency Service Providers of Roadway Closure) as part of the Project to accommodate emergency vehicle passage, and emergency service agencies (fire district, police, ambulance and paramedic) would be notified at least one month before each closure by LADWP.

CEQA Significance

Under Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GP-2 and GP-55 would minimize traffic related to roadway closure during construction to avoid a delay in emergency vehicle response times. Impact PSU-5 would be less than significant.

Impact PSU-6: Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services.

Helicopters used for construction of the Alternative 2a transmission line could temporarily hinder emergency aircraft response capabilities in the ANF, if an emergency were to transpire in proximity to a helicopter construction site.

In addition, the presence of a new overhead transmission line could create an obstruction to emergency aircraft response services. Operation of the Alternative 2a transmission line would increase the required altitude for firefighting aircraft in a 5.7 mile area southwest of the unincorporated community of Green Valley, where the new line would represent the tallest structure in the immediate vicinity. Within this 5.7-mile stretch, a transmission line bounded island (discussed in the Wildfire and Fuels Technical Report in Volume III) would be formed between the Alternative 2a transmission line and the existing BR-RIN transmission line, creating an indefensible space where aerial and ground attacks are prohibited and potential wildfires could build in size and intensity.

Project helicopters would adhere to applicable FAA regulations regarding flight restrictions in designated areas, and GP-21 (Helicopters Utilized for Construction Shall Cease Activities in the Event of a Fire in the ANF) would be implemented to eliminate potential interference with aerial firefighting activities. If required by FAA, appropriate aerial warning signage and lighting would be installed on the towers and/or conductors to warn pilots of the location of the new line, and the ANF Firefighting Safety Hazard maps would be updated and distributed to relevant agencies upon completion of construction to mitigate for aerial firefighting hazards.

CEQA Significance

Helicopter adherence to applicable FAA regulations and implementation of GP-21 would eliminate potential interference with aerial firefighting operations during the construction of Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives. In addition and if required by FAA, LADWP would install appropriate signs and lighting on the towers and/or conductors to warn pilots of the location of the new line, and the ANF Firefighting Safety Hazard maps would be updated and distributed to relevant agencies upon completion of construction to mitigate for aerial firefighting hazards, reducing Impact PSU-6 to less than significant.

The Project would substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater. (Criterion PSU-3)

Impact PSU-7: Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption.

As with the Alternative 2 transmission line, the Alternative 2a transmission line would require potable water for worker drinking and sanitation purposes and recycled water would be required to suppress fugitive dust in the excavation areas. The amount of water required for these activities would be approximately the same as the Proposed Action, and would not hinder the ability of local water purveyors to adequately supply water to the area.

__CEQA Significance__

The water needs for Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not strain existing water service capacities, requiring the construction of new or expansion of existing water facilities or entitlements; Impact PSU-7 would be less than significant.

Impact PSU-8: Additional wastewater would be generated during Project construction and operation.

Impact PSU-8 would be generally the same for construction of the Alternative 2a transmission line and the Alternative 2 transmission line. Project facilities would not be manned on a daily basis, and a septic system would be installed at the construction staging areas to collect wastewater outflow generated by worker use of portable toilets at these facilities.

__CEQA Significance__

Wastewater associated with Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not require the expansion of wastewater collection systems or treatment facilities in the area. Local wastewater treatment providers would be able to adequately serve the Project in addition to existing commitments. Impact PSU-8 would be less than significant.

Impact PSU-9: Additional solid waste would be generated during Project construction and operation.

Construction and maintenance of the Alternative 2a transmission line would generate approximately the same amount of solid waste as the Alternative 2 transmission line. Scrap materials from transmission towers, foundations, electrical equipment and other debris would be recycled to the maximum extent practicable. Unsalvageable material would be disposed of at facilities authorized to accept such waste, in accordance with applicable laws and regulations. While mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from disposal at a landfill.

__CEQA Significance__

Impact PSU-9 would result from debris generated during construction and operation of Alternative 2a, but would be less than significant. Although solid waste produced by Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, is not anticipated to exceed the capacity of landfills identified in

Chapter 3, Table 3.2.6-2, implementation of PSU-1 would ensure that the maximum quantity of Project waste is diverted from landfill disposal.

The Project would require new or expanded water supply resources or entitlements (Criterion PSU-4)

The Project's water needs during construction, operation, maintenance, and decommissioning of Alternative 2a would be adequately served by local water purveyors and systems; new or expanded water entitlements and resources would not be required. The amount of recycled water needed for fugitive dust control during ground disturbing activities, and potable water for drinking and sanitation purposes, would be similar to the Proposed Action.

__CEQA Significance__

Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not require new or expanded water supply resources or entitlements. No impact would result.

The Project would conflict with federal, state, and local statutes and regulations related to solid waste (Criterion PSU-5)

Impact PSU-10: The Project would conflict with applicable statutes and standards related to solid waste.

The quantity and types of solid waste produced by construction, operation, maintenance, and decommissioning of the Alternative 2a transmission line would be similar to the Alternative 2 transmission line and would not exceed the capacity of landfills identified in Chapter 3, Table 3.2.6-2. A portion of the solid waste material would be diverted from landfill disposal according to the minimum standards established by the Integrated Waste Management Act of 1989 and Assembly Bill 939.

Implementation of PSU-1 is recommended to ensure that the maximum quantity of Project waste is diverted from landfill disposal.

__CEQA Significance__

Under Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of PSU-1 would ensure that Impact PSU-10 would not result from construction or maintenance operations.

The Project would cause utility system disruptions or would cause a co-location accident through the crossing or shared location with another utility line (Criterion PSU-6)

Impact PSU-11: Project construction would temporarily disrupt the flow of services provided by underground or overhead utilities.

Construction of the Alternative 2a transmission line could result in Impact PSU-11. As with the Alternative 2 transmission line, construction of the Alternative 2a transmission line would occur in proximity to existing above- and below-ground utilities and similar construction methods would be utilized, with the exception of seven miles in the ANF, where helicopter construction would be required.

The location of existing utilities would be identified by LADWP along the Project alignment before construction, and potential co-location accidents would be avoided, where feasible. In accordance with California State law, LADWP would notify the Underground Service Alert at least two working days before any Project excavation activities. Surveys and manual probing would also be conducted by LADWP along the Alternative 2a transmission line alignment before drilling and excavation activities to ensure the avoidance of a co-location accident with existing underground water, power, gas, and sewer lines.

CEQA Significance

Under Alternative 2a, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, notification of the Underground Service Alert, surveys, and manual probing of the area would be done before construction in accordance with State law requirements, the risk of an accidental co-location accident with existing utility lines and an associated temporary service outage would be minimal. Consequently, Impact PSU-11 would be less than significant.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

The Project would increase the demand for public services that cannot be readily met by existing public service providers and facilities (Criterion PSU-1)

Impact PSU-1: Project construction could temporarily increase the demand for fire protection and emergency medical services.

The Alternative 3 transmission line would contain no mileage ranked as High for avoidance due to fire risk or fire severity potential (see the BRRTP Wildfire and Fuels Technical Report in Volume III). Therefore, the Alternative 3 transmission line would pose a more benign fire risk relative to the Alternative 2 transmission line, and would not be likely to impose a burden on fire protection service providers during its construction phase.

The first 40 miles of the Alternatives 3 and 2 transmission line routes would be the same; arid lands traversed in this area possess a minimal fire history, low population density, and sparse levels of vegetative fuels. The southern extension of the route would cross land containing a greater amount of vegetative fuels and construction activities could temporarily increase the demand for firefighting services in unincorporated Los Angeles County, along the western boundaries of the cities of Lancaster and Palmdale, and in a small area of the ANF. As with the Alternative 2 transmission line, construction-related injuries could occur, requiring emergency medical attention. Temporary fire hazard impacts associated with sources of human influenced ignition would be similar to the Alternative 2 transmission line, and could occur within or adjacent to the ROW or staging areas. A significant impact would result if additional firefighting provisions would need to be brought in from other critical firefighting areas to manage or extinguish fire during construction of the Alternative 3 transmission line.

LADWP would implement mitigation measure AIR-2d (Limit Construction Vehicle Idling), and AIR-2a (Watering of the Site for Fugitive Dust Control) as well as mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) to reduce the potential for accidental ignition and unnecessary burden on firefighters. LADWP would also implement GP-4 (Health and Safety Plan) as part of the Project to minimize the potential for construction-related injuries and the need for emergency medical services.

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of mitigation measures AIR-2a, AIR-2d, and GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would ensure a minimal fire risk and would reduce the need for short-term provisions of fire or emergency response services. Impact PSU-1 would be less than significant.

Impact PSU-2: Project operation could increase the demand for fire protection and emergency medical services.

Due to the nature of the route, operation of the Alternative 3 transmission line would pose a more benign fire risk relative to the Alternative 2 transmission line, and would be less likely to impose a burden on fire protection service providers.

As with the Alternative 2 transmission line, tall tree branches would be pruned periodically within the ROW to minimize vegetative fuels, and flammable materials that would present a potential fire hazard would be restricted from the ROW. Mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would be implemented to reduce wildfire incidences during operation, and to ensure that reallocation of resources from other critical firefighting areas would not be required to serve the Project.

The potential for worker injury and the need for emergency medical services during Project maintenance operations would be minimized through implementation of GP-4 (Health and Safety Plan).

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, GP-4 and mitigation measures identified in Section 4.2.11 (Wildfire and Fuels) would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Project. Impact PSU-2 would be reduced to less than significant.

Impact PSU-3: Project construction activities could temporarily increase the demand for police protection services.

Construction of the Alternative 3 transmission line could result in a temporary increase in the demand for law enforcement services in Kern and Los Angeles counties, the cities of Lancaster and Palmdale, and the ANF. The aid of local policing units would be required for coordination of temporary single-lane roadway closures during the transport of oversized equipment and stringing of the conducting wires in proximity to roadways.

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, Impact PSU-3 would be less than significant.

Impact PSU-4: Project construction activities could temporarily increase the demand for schools, parks, or other public facilities.

LADWP would hire local labor forces to construct the Alternative 3 transmission line, and workers already residing in the vicinity of the Project would commute to the job-site over the two-year construction period. This would not introduce a new permanent population to the area that would result in a long-term increase in the demand for schools, parks, or other public facilities.

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, the construction of new or augmentation of existing schools, parks, or other public facilities would not be required to serve the Project; associated impacts would not result.

Project construction or operation could restrict or interfere with emergency response vehicle access or aircraft response services (Criterion PSU-2)

Impact PSU-5: Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times.

Similar to the Alternative 2 transmission line, construction of the Alternative 3 transmission line would require the temporary closure of single-lanes on specific roadways, which could hinder the regular flow of traffic. Congestion of roadways could restrict access or block emergency response pathways used by emergency vehicles. The presence of construction equipment and personnel could also impede wildfire suppression tactics on the ground during a wildfire. The potential for delays in emergency vehicle response time during such events would be reduced through implementation of GP-2 (Traffic Control Plan) and GP-55 (Notify Local Emergency Service Providers of Roadway Closure).

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GP-2 and GP-55 would reduce the potential for delays in emergency vehicle response times; Impact PSU-5 would be less than significant.

Impact PSU-6: Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services.

The use of helicopters during construction in the ANF could interfere with emergency response aircrafts if an emergency were to occur in the vicinity of proposed helicopter construction sites. During Project operation, the new transmission line would parallel existing transmission lines that would be approximately the same height, and aerial warning signage and lighting would be installed on the towers and/or conductors to warn pilots of the new line's presence, as necessary.

CEQA Significance

Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would not have the potential for interference with emergency aircraft firefighting services. Impact PSU-6 would not occur and no mitigation is required.

The Project would substantially change the ability of water treatment, wastewater treatment, or solid waste facilities to adequately supply water and accommodate solid waste and wastewater (Criterion PSU-3)

Impact PSU-7: Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption.

When compared to the Alternative 2 transmission line, the water needs for construction of the Alternative 3 transmission line would be slightly greater due to the longer length of the route, and would be required for the same purposes (i.e., drinking and sanitation, fugitive dust suppression). The amount of water required for these activities would not hinder the ability of local water purveyors to adequately supply water to the area.

CEQA Significance

The water needs for Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would not strain existing water service capacities, requiring the construction of new or expansion of existing water facilities or entitlements; Impact PSU-7 would be less than significant.

Impact PSU-8: Additional wastewater would be generated during Project construction and operation.

The use of portable toilets at the construction staging areas would result in Impact PSU-8. Disposal methods used for the Alternative 3 transmission line sanitation waste would be the same as methods used for the Alternative 2 transmission line (i.e., septic tanks or municipal sewage systems), and the quantity of wastewater produced would not exceed the service capabilities of wastewater treatment facilities in the Project area.

CEQA Significance

Wastewater generated as a result of Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would be minimal, and would not affect the local wastewater treatment provider's ability to adequately serve the Project in addition to existing commitments. Impact PSU-8 would be less than significant.

Impact PSU-9: Additional solid waste would be generated during Project construction and operation.

The Alternative 3 transmission line route would be 14.8 miles longer than the Alternative 2 transmission line and may generate slightly more debris; however, the volume of solid waste would not surpass capacities of local landfills in the region. Implementation of PSU-1 (Recycle Solid Construction Waste) would maximize the quantity of Project waste diverted from landfill disposal, and would minimize associated impacts.

CEQA Significance

Although the quantity of solid waste debris generated by Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, construction activities would not exceed the capacity of landfills identified in Chapter 3, Table 3.2.6-2, implementation of PSU-1 is recommended to ensure that the maximum amount of waste material is diverted from landfill disposal. Impact PSU-9 would be less than significant.

The Project would require new or expanded water supply resources or entitlements (Criterion PSU-4)

Since the length of the Alternative 3 transmission line route and construction duration would be longer than the Alternative 2 transmission line, the quantity of water needed for the Alternative 3 transmission line would be greater than the needs for the Alternative 2 transmission line.

However, new or expanded water supply resources or entitlements would not be necessary to support the water requirements for this Alternative.

CEQA Significance

Construction, operation, maintenance, and decommissioning of Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would not require new or expanded water supply resources or entitlements; no associated impacts would result.

The Project would conflict with federal, state, and local statutes and regulations related to solid waste (Criterion PSU-5)

Impact PSU-10: The Project would conflict with applicable statutes and standards related to solid waste.

Construction of the Alternative 3 transmission line would produce the same types of debris as the Alternative 2 transmission line, although a slightly larger volume of solid waste materials would result due the longer length of the route. As with the Alternative 2 transmission line, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from landfill disposal.

CEQA Significance

With implementation of PSU-1, Impact PSU-10 would not result. Local waste management facilities would have sufficient capacity to accept the relatively small quantity of solid waste generated by construction of Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives.

The Project would cause utility system disruptions or would cause a co-location accident through the crossing or shared location with another utility line (Criterion PSU-6)

Impact PSU-11: Project construction would temporarily disrupt the flow of services provided by underground and overhead utilities.

Construction methods utilized for the Alternative 3 transmission line would be similar to those used for the Alternative 2 transmission line, and underground utilities existing in the area could be accidentally encountered during site excavation activities.

To minimize the potential for co-location accidents with the Alternative transmission line, the location of existing utilities would be identified by LADWP along the Alternative 3 transmission line alignment before construction, and LADWP would notify the Underground Service Alert at least two working days before any Project excavation activities. Surveys and manual probing would also be conducted by LADWP to identify the location of existing underground utilities along the alignment before Alternative 3 transmission line drilling and excavation activities.

CEQA Significance

Under Alternative 3, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, notification of the Underground Service Alert, surveys, and manual probing of the area would be done before construction of Alternative 3 in accordance with State law requirements, the risk of an accidental co-location accident with existing utility lines and an associated temporary service outage would be minimal. Consequently, Impact PSU-11 would be less than significant.

4.2.7 HAZARDOUS WASTE AND MATERIALS

Introduction

The purpose of this section is to evaluate the hazardous materials impacts related to implementation of the Proposed Action and its Alternatives. This section provides an overview of the technical methodology used in evaluating impacts, describes impacts from construction and operation of the Project (based upon NEPA/CEQA criteria), and presents mitigation measures to reduce, eliminate or avoid potentially significant impacts.

Public health and safety hazards related to wildfire, electric and magnetic fields (EMF), and aviation safety are addressed in Sections 4.2.11 (Wildfire and Fuels), 4.2.12 (Electrical Effects), and 4.2.3 (Land Use), respectively.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to hazardous waste and materials are addressed in this analysis:

- Identify the types of hazardous materials associated with construction of the Project.
- Identify the requirements for handling and recycling Project construction and demolition debris.

Impact Assessment Methodology

For the purposes of this analysis, Project impacts involving hazardous materials would be associated with the potential mobilization of contaminated substances through earthmoving activities and handling of contaminated soil, resulting in human exposure. Conditions of contamination could either exist as the result of previous land use residuals, or could be the result of releases associated with construction and maintenance of the Project itself. Contaminants encountered or used during Project construction and maintenance may require special handling to minimize risks associated with human and environmental exposure.

Exposure to hazardous materials may result in short-term and/or long-term health effects, which may include, but are not limited to, eye or skin irritation, allergic reactions, headache, disorientation, nausea, and chronic illness, depending on the extent of human exposure and the contaminants involved. Hazardous materials that may be encountered or used during Project activities include substances that are flammable, carcinogenic (known to cause cancer), corrosive (chemically active with the potential to cause material damage or dermal burns upon contact), or reactive (potentially explosive or may generate gases/fumes). Examples of common flammable substances include gasoline and natural gas. Examples of carcinogens include benzene (a component of gasoline), pesticides, and most heavy metals. Examples of corrosive substances include battery acid (found in car batteries) as well as other strong acids and bases. Examples of reactive materials include high pressurized canisters and explosives (blasting materials).

Excavated soil would be classified as "hazardous waste," requiring remediation from a project site, if it exceeded criteria identified in CCR Title 22. Contaminated soils that are revealed during site excavation would need to be treated on-site, transported to an off-site processing facility, or transported to a disposal facility permitted to accept such waste. All federal, State, and locally mandated regulations would need to be followed during hazardous waste handling and transport, and the excavated sites must be backfilled with imported clean soil. Site remediation requirements are determined on an individual basis by the agency taking lead jurisdiction.

Distance and surface land use features (e.g., roads) typically limit surface migration of contaminants from the source. In general, active contamination sites more than 0.25 mile from the Proposed Action or Alternative routes would have no potential to cause contamination during Project excavation activities. Subsurface migration of contaminants generally occurs in a vertically downward direction, except in areas of significant slope where contamination may follow the direction of the gradient. Generally, groundwater contaminants are not expected to migrate far from the source of contamination unless a steep groundwater gradient or well pumping action has created a significant flow in the local groundwater. In the Project area, depth-to-water measurements range from a high of 1.2 feet below surface from an LADWP well in the Acton Valley Groundwater Basin to a low of 390.79 feet below surface from a U.S. Geological Survey monitoring well in the Antelope Valley Groundwater Basin. Along the Proposed Action and Alternative alignments, groundwater is generally deep below ground surface in the Antelope Valley area (117.4 to 390.8 feet), with shallower areas near the southern extension of Alternative 1 (9.6 to 67.0 feet) and Alternative 3 (1.2 to 80.5 feet). Since the maximum excavation depth required for transmission structure construction typically would not exceed 40 feet, the potential for coming into direct contact with contaminated groundwater would be generally low and would only occur locally during construction of the southern extension of the transmission line routes, if at all. See Section 4.3.3, Water Resources, for further discussion of groundwater along the Proposed Action and Alternative alignments.

Significance Criteria

The following significance criteria related to environmental contamination were derived from previous environmental impact assessments and from Appendix G of the CEQA Guidelines. Impacts of the Proposed Action or its Alternatives would be considered significant, requiring mitigation, if they would occur under any of the following conditions:

- Criterion HAZ-1: The Project would result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24.

- Criterion HAZ-2: Project activities would release contaminants currently existing in the soil, potentially exposing humans or other sensitive receptors.
- Criterion HAZ-3: Operation of the Project would contaminate soil or groundwater in the area, potentially exposing workers and/or the public to contaminated or hazardous materials at levels which exceed those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR 1910.

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, the following impact analysis regarding the significance of identified impacts is provided to satisfy the requirements of CEQA only.

Mitigation Planning

Mitigation measures are designed to reduce impacts associated with the Project. Specific mitigation measures are recommended when it is determined that Project design and/or GPs would not fully mitigate an impact. These mitigation measures were applied to reduce significant hazardous materials impacts, on a case-by-case basis, where appropriate (see Table 4.2.7-1).

TABLE 4.2.7-1. MITIGATION MEASURES – HAZARDOUS MATERIALS

Mitigation Measure	Description
HAZ-1	**Environmental Monitoring Program.** A construction monitoring plan shall be enforced by LADWP and its contractors to ensure that provisions outlined in Project-specific plans are correctly followed for the duration of the construction period. Site-specific plans would include, but are not limited to, the Emergency Response Plan; Hazardous Materials/Waste Management Plan; SWPPP; Soil Management Plan; and the SPCC.
HAZ-2	**Document compliance with measures for encountering unknown contamination.** If evidence of soil or groundwater contamination is detectable by visual and/or olfactory observation during Project construction, a report documenting the exact contamination location, laboratory test results, actions taken, and recommended mitigation (if applicable) shall be submitted to the USFS (if on USFS lands) or BLM (if on BLM lands) for each incident. This report shall be submitted within 30 days of LADWP's receipt of laboratory results.
HAZ-4	**Herbicide Application Protocols.** **Protocol 1- Selection of Project Herbicides:** • Herbicides would be selected from an LADWP- and USFS-approved list, with mixture and dilution ratios that have been specified by the manufacturer. **Protocol 2- Contract Qualified Personnel for Herbicide Application:** • Individuals selected for herbicide application must possess all appropriate State and local herbicide applicator licenses, and documented training complying with applicable regulations and ordinances. • Supervisory personnel must be familiar with the application areas and must be present to monitor herbicide application in these areas. • Contractors applying herbicides must follow all applicable regulations regarding herbicide use. **Protocol 3a- Field Preparation Procedures:** • Contractors shall follow all specifications/recommendations provided by the manufacturer for mixing and application of herbicides. Only the minimum amount of chemicals required to adequately complete the job shall be mixed.

Mitigation Measure	Description
	• Herbicide chemical mixing and vehicle loading must be conducted before entering the field, and all vehicles shall contain Hazardous Materials Spill Management Kits. • Calibrate and inspect all spray equipment before entering the field to maintain adequate functionality. • Distribute safety equipment, information, and emergency supplies to the application crew, including splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and Materials Safety Data Sheets (MSDS), for all materials to be used on the job. **Protocol 3b- In-Field Preliminary Procedures:** • Before each herbicide application, the local weather conditions and the physical and climatic setting of the target area must be evaluated. • Before herbicide application, mechanically remove appropriate vegetation at the target sites, as applicable. Minimize unnecessary environmental disturbance by preparing the work area at target sites. **Protocol 3c- Application Restrictions:** • Avoid contact with areas frequently occupied by humans and domestic animals and/or their food sources (i.e., yards, pens, food crops, drinking water, feed storage areas). • Protect wildlife and valued vegetation from direct contact with herbicides. Only chemicals that are non-toxic to birds and small mammals shall be applied in areas where nests or dens are observed. • Protect aquatic wildlife from chemical runoff. Avoid spraying within 50 feet of well heads. Avoid spraying near roadside drainage channels or within 50 feet of any surface water body when water present. • Avoid application under the following conditions to avoid chemical drift and contamination outside the target sites: Under conditions of rain or when rain is imminent, during site irrigation, when the target site contains puddles, when the site has a slope that exceeds a 1:1 ratio. • Avoid chemical drift outside of target sites by avoiding application during wind velocities in excess of 10 mph. If chemical drift is observed during application, discontinue spraying until conditions causing the drift stop. **Protocol 3d- In-Field Application Procedures:** • Complete preliminary site evaluation checks to record adverse conditions identified in the field. Avoid application in those areas. • Do not dump excess pesticide onto soil or into drains. Do not dump or scatter vegetation waste into drainage canals or surface water bodies. Avoid fueling of maintenance vehicles/equipment within 100 feet of water bodies. • Apply the minimum amount of chemicals necessary to complete the objective at the site. Minimize overlapping previously sprayed areas. **Protocol 4- Post-Application Protocols:** • Spray tanks shall be cleaned at the Project staging yards and shall be appropriately reused. Excess herbicide and containers shall be stored and disposed of according to the manufacturer's label by the construction contractor. After application, a record of herbicide application performed at each target site shall be provided by the contractor to LADWP, the USFS, and the BLM, as appropriate. **Protocol 5- Spill Clean-up Procedures:** • Immediately after a spill incident, absorbent material shall be applied. Affected media shall then be placed into a hazardous material storage container, and LADWP would be notified. If wildlife nests or dens are accidentally sprayed, personnel shall immediately notify their supervisor, who shall report the incident to LADWP within 24 hours.

Summary of Impact Analysis Results

Detailed discussions of each impact and the specific locations where each is identified are presented in the following sections. Table 4.2.7-2 below summarizes impacts related to hazardous materials that are relevant to the Proposed Action and Alternatives, based on the significance criteria discussed above.

TABLE 4.2.7-2. IMPACTS IDENTIFIED – HAZARDOUS MATERIALS

Impact Number	Description
HAZ-1	Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.
HAZ-2	The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors.
HAZ-3	Project construction activities (i.e., site excavation or grading) could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code Section 65962.5 or other known sites.
HAZ-4	Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.
HAZ-5	Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.
HAZ-6	Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

No Action Alternative

Under this Alternative, neither the Proposed Action nor its Alternatives would be constructed. If the deficient condition persisted under the projected load growth scenario, long-term system reliability would be jeopardized, increasing the potential for brown-outs and black-outs in the City of Los Angeles.

If the Proposed Action or its Alternatives were not constructed, baseline conditions in the Project area would not remain static. Currently known contamination sites in the region could undergo remedial action, and previously unknown contaminants may be revealed. The conditions of soil and groundwater would change over the course of time, and these changes could be attributed to the use of hazardous materials in the construction and/or operation of other development projects such as industrial, agricultural, or commercial uses.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

Construction activities associated with this Project component would consist of stringing a second circuit onto existing Castaic to Olive 230 kV transmission line structures between the proposed Haskell Canyon Switching Station and the Castaic Power Plant. The analysis of this Project component revealed the following:

No schools were identified within one quarter-mile of the proposed circuit addition area; no schools would be impacted by Project-related hazardous emissions or handling of hazardous materials.

No listed Resource Conservation and Recovery Act (RCRA) sites exist on the subject property and excavation activities would not be required for stringing of the new 230 kV circuit; therefore, no impacts are anticipated to occur as the result of unearthing known or unknown hazardous materials creating a significant environmental contamination hazard or health hazard to workers or the public.

The application of herbicides would not be required for vegetation control near this Project component; no associated health risks or environmental contamination risks due to exposure to such materials would occur.

During stringing of the new 230 kV circuit, the following impacts could potentially occur, but would be less than significant or mitigated to less than significant:

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Hazardous materials used during stringing of the new 230 kV circuit would consist primarily of petroleum products needed to fuel or lubricate field vehicles and equipment. Unauthorized releases of these materials could contaminate soil or compromise groundwater quality. As part of the Project, LADWP would implement GPs 3 through 5, 18, and 19 to minimize the potential for accidental spills, limit the use of such materials to designated areas, and ensure proper clean-up and disposal of spilled materials.

Implementation of HAZ-1 would enforce adherence to these GPs throughout the construction period, adequately reducing potentially significant impacts associated with the improper storage, transport, and use of hazardous materials to less than significant.

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

After the new 230 kV circuit is added, maintenance operations for the existing Castaic to Olive 230 kV transmission line would continue to occur as they have in the past. LADWP would prevent or minimize the likelihood for Impact HAZ-5 to occur by implementing GPs 3 and 18; consequently, Impact HAZ-5 would be less than significant with no mitigation required.

Reconductoring of the BR-RIN Transmission Line
Reconductoring of the existing BR-RIN 230 kV transmission line would require surveying of the ROW, rehabilitation of existing access and spur roads, clearing of the ROW, conductor installation, ground rod installation, and cleanup. The existing line would be removed and used to string the new conductor. Some existing transmission structures would need to be modified or replaced, and some of the foundations reinforced, to support the weight of new heavier conductors. The analysis of this Project component revealed the following:

No schools were identified within one quarter-mile of the BR-RIN reconductoring area; no schools would be impacted by Project-related hazardous emissions or handling of hazardous materials.

Between the existing Barren Ridge Switching Station and proposed Haskell Canyon Switching Station site, hazardous materials sites identified within 0.25 mile of the BR-RIN would be the same as those identified for the Proposed Action, and no RCRA sites were identified in the BR-RIN ROW. In addition, since no excavation for the BR-RIN would occur on lands traversed south of Haskell Canyon, no impacts related to the mobilization of known hazardous materials are anticipated to occur.

The following impacts could potentially occur as a result of reconductoring the BR-RIN transmission line, but would be less than significant or mitigated to a less-than-significant level:

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Transmission structure replacement, foundation repairs, and stringing of the BR-RIN transmission line would require the temporary use of hazardous materials (i.e., petroleum products) and would generate construction debris. Debris, including spare parts and scrap materials from the replacement or reinforcement of BR-RIN towers, would be removed from the site, sorted, characterized, and disposed of or recycled by an LADWP waste management contractor pursuant to LADWP and agency requirements. LADWP would implement GPs 3 through 5, 18 and 19 as part of the Project. In addition, implementation of HAZ-1 would reduce Impact HAZ-1 to less than significant.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Along the BR-RIN ROW, unknown contamination sites are more likely to be encountered in urban settings such as the cities of Santa Clarita and Los Angeles. Industrial and commercial uses adjacent to the ROW are likely to use or contain materials that would be considered hazardous. Hazardous materials from these land uses could have entered the soil or groundwater and migrated to the BR-RIN ROW; however, the likelihood of encountering and mobilizing these substances would be low since no excavation (i.e., transmission structure replacement) would occur on lands south of Haskell Canyon.

As part of the Project, GPs 39 and 7 would be implemented to address potential contamination indicators observed during construction activities, and to provide guidance for the proper interpretation, handling, management, and disposal of potentially impacted soil. Implementation of HAZ-2 would reduce the impact from encountering unknown contamination to less than significant.

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

LADWP already drives vehicles and uses equipment in the BR-RIN transmission line ROW for periodic maintenance of the existing line. After transmission structure replacement, foundation repairs, and re-stringing of the BR-RIN, maintenance operations would continue to occur as they have in the past. LADWP would prevent or minimize the likelihood for Impact HAZ-5 to occur as the result of accidental spills by implementing GPs 3 and 18. Impact HAZ-5 would be less than significant with no mitigation required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

During operation of the BR-RIN line, herbicides may be applied for vegetation control within a 10-foot radius of replaced or reinforced towers in the ANF. Airborne or physical exposure to herbicides applied for the Project could potentially impact workers or members of the public that enter affected portions of the ROW, resulting in Impact HAZ-6.

However, due to implementation of BIO-2 (see Section 4.3.1, Biological Resources), impacts associated with human exposure to herbicide residuals would be reduced to a less-than-significant level.

New Haskell Canyon Switching Station
The analysis of this Project component revealed the following:

No schools were identified within one quarter-mile of the proposed Haskell Canyon Switching Station site; no schools would be impacted by Project-related hazardous emissions or handling of hazardous materials.

No listed RCRA sites exist at the proposed Haskell Canyon Switching Station site and no other known hazardous materials sites that could create a significant environmental contamination hazard or hazard to the health of workers or the public were identified within 0.25 mile of the site; therefore, no impacts related to the excavation and mobilization of known hazardous materials are anticipated to occur.

The following impacts could potentially occur as a result of the proposed Haskell Canyon Switching Station site, but would be less than significant or mitigated to less than significant:

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Hazardous materials used during construction of the proposed Haskell Canyon Switching Station would include, but are not limited to, petroleum products for vehicles/gas operated machines, solvents, oils, welding materials, propane, canned spray paint, paint thinners, and insect repellant. Unauthorized releases of these materials could contaminate soil or compromise groundwater quality. As part of the Project, LADWP would implement GPs 3 through 5, 18, and 19 to minimize the potential for accidental spills, limit the use of such materials to designated areas, and ensure proper clean-up and disposal of spilled materials.

Implementation of HAZ-1 would enforce adherence to these GPs throughout the construction period, adequately reducing potentially significant impacts associated with accidental hazardous materials spills to less-than-significant levels.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Unknown contaminants may be unearthed and mobilized during construction of the proposed Haskell Canyon Switching Station. As part of the Project, GP-39 and GP-7 would be implemented to address potential contamination indicators observed during construction activities, and to provide guidance for the proper interpretation, handling, management, and disposal of potentially impacted soil. Implementation of HAZ-2 would reduce the impact from encountering unknown contamination to a less-than-significant level.

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Maintenance operations for the Haskell Canyon Switching Station would require the periodic transport, use, and disposal of hazardous liquids (e.g., petroleum products) that could pose a potential risk to the public or the environment if improperly used or inadvertently released. In addition, above-ground fuel tanks containing flammable or volatile liquids (e.g., gasoline) may be stored on-site at the Haskell Switching Station and unintentional release could present a fire hazard or environmental contamination hazard .

Pursuant to 40 CFR 112, GP-6 (Spill Prevention, Countermeasure, and Control Plan) would require development and utilization of a new SPCC Plan for the proposed Haskell Canyon Switching Station.

Implementation of GPs 3, 6, and 18 would reduce the potential for hazardous materials spills to occur during maintenance of the proposed Haskell Canyon Switching Station. Implementation of these GPs would also ensure adequate remediation of spilled materials, resulting in limited to no human and/or environmental exposure to Project-related hazardous substances. Impact HAZ-5 would be less than significant with no mitigation required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

During operation of the proposed Haskell Canyon Switching Station, herbicides may be applied for vegetation control around the facility. Airborne or physical exposure to herbicides applied for the Project could potentially impact workers or members of the public that enter affected areas, resulting in Impact HAZ-6.

However, due to implementation of BIO-2 (see Section 4.3.1, Biological Resources), impacts associated with human exposure to herbicide residuals would be reduced to less-than-significant levels.

Expansion of the Barren Ridge Switching Station
The analysis of this Project component revealed the following:

No schools were identified within one quarter-mile of the Barren Ridge Switching Station expansion area; no schools would be impacted by Project-related hazardous emissions or handling of hazardous materials.

No listed RCRA sites exist at the Barren Ridge Switching Station expansion area and no other known hazardous materials sites that could create a significant environmental contamination hazard or hazard to the health of workers or the public were identified within 0.25 mile of the site; therefore, no impacts related to the excavation and mobilization of known hazardous materials are anticipated to occur.

The application of herbicides would not be required for vegetation control in the Barren Ridge Switching Station expansion area; no associated health risks or environmental contamination risks due to exposure to such materials would occur.

The following impacts could potentially occur as a result of expanding the existing Barren Ridge Switching Station, but would be less than significant or mitigated to a less-than-significant level:

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Hazardous materials used during expansion of the existing Barren Ridge Switching Station would consist primarily of petroleum products needed to fuel or lubricate field vehicles and equipment. Unauthorized releases of these materials could contaminate soil or compromise groundwater quality. As part of the Project, LADWP would implement GPs 3 through 6, 18, and 19 to minimize the potential for accidental spills, limit the use of such materials to designated areas, and ensure proper clean-up and disposal of spilled materials.

Implementation of HAZ-1 would enforce adherence to these GPs throughout the construction period, adequately reducing potentially significant impacts associated with accidental hazardous materials spills to less-than-significant levels.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Although no known hazardous materials sites were identified within 0.25 mile of the proposed Barren Ridge Switching Station expansion area, there is still the possibility that unknown contaminants may be unearthed and mobilized during construction at the site. For example, historical operation of the switching station may have involved the on-site storage of flammable and volatile toxic liquids such as benzene (a component of gasoline) in above-ground storage tanks. Undetected leaks could have resulted in contamination that may have migrated to the expansion area.

As part of the Project, GPs 39 and 7 would be implemented to address potential contamination indicators observed during construction activities, and to provide guidance for the proper interpretation, handling, management, and disposal of potentially impacted soil. Implementation of HAZ-2 would reduce the impact from encountering unknown contamination to a less-than-significant level.

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Maintenance operations for the Barren Ridge Switching Station would require the periodic transport, use, and disposal of hazardous liquids (e.g., petroleum products) that could pose a potential risk to the public or the environment if improperly used or inadvertently released. In addition, above-ground fuel tanks containing flammable or volatile liquids (e.g., gasoline) may be stored on-site and could present a fire hazard or environmental contamination hazard if unintentionally released.

Pursuant to 40 CFR 112, GP-6 (Spill Prevention, Countermeasure, and Control Plan) would require an update to the existing SPCC Plan for the Barren Ridge Switching Station.

Implementation of GPs 3, 6, and 18 would reduce the potential for hazardous materials spills to occur during maintenance of the existing Barren Ridge Switching Station. Implementation of these GPs would also ensure adequate remediation of spilled materials, resulting in limited to no human and/or environmental exposure to Project-related hazardous substances. Impact HAZ-5 would be less than significant with no mitigation required.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

The Project would result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24 (Criterion HAZ-1)

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

The Alternative 1 transmission line would result in the same types of impacts as the Alternative 2 transmission line regarding Criterion HAZ-1. Relative to the Alternative 2 transmission line, this transmission line would require greater use of hazardous materials to construct the longer route. This could incrementally increase the potential for soil or groundwater contamination to occur as a result of an accidental spill or unauthorized release during the construction period.

Heavy lift helicopters would be utilized for transmission line construction activities (i.e., tower and material transport, wire-stringing) along an 8.4-mile segment of the Alternative 1 transmission line in the ANF. Accidental spills or leaks of liquid fuels or other lubricants during the operation or refueling of Project helicopters could contaminate soil and groundwater. Helicopter landing and refueling activities would be limited to approved helicopter staging areas, marshalling yards, and local airports in accordance with GP-20 (Refueling of Helicopters Utilized for Project Construction).

As with the Alternative 2 transmission line, LADWP would implement GP-3 (Hazardous Materials and Hazardous Waste Management Plan), GP-4 (Health and Safety Plan), GP-5 (Storm Water Pollution Prevention Plan), GP-18 (Maintain Hazardous Materials Spill Management Kits), and GP-19 (Refueling/Lubrication of Construction Vehicles and Equipment) as part of the Project design.

To further reduce potential impacts related to hazardous materials spills during construction, HAZ-1 would be implemented to enforce adherence to Project plans and GPs.

CEQA Significance

Although construction of Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, would require greater use of hazardous materials than the Proposed Action, HAZ-1 would be implemented to ensure worker conformance to Project plans and measures identified in GPs 3 through 5, 18, 19 and 20. This would adequately reduce impacts associated with the storage, transport, and use of hazardous materials to less than significant levels.

Impact HAZ-2: The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors.

One existing school was identified with one quarter-mile of the Alternative 1 transmission line in unincorporated Los Angeles County: Neenach Elementary School. Although this school is currently vacant, it could potentially be used at a later date. LADWP has committed to implementing GPs 3, 4 and 19, which include development and implementation of an Emergency Release Response Plan and a Health and Safety Plan, as well as detailed information related to the proper transport of materials, containment of materials, and the fueling/maintenance of construction vehicles and equipment.

CEQA Significance

Under Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3, 4 and 19 would minimize the potential for accidental spills of hazardous materials to occur during construction. Impacts to this school related to the unauthorized release of hazardous emissions or other Project contaminants would be less than significant.

Project activities would release contaminants currently existing in the soil, potentially exposing humans or other sensitive receptors (Criterion HAZ-2)

Impact HAZ-3: Project construction activities (i.e., site excavation or grading) could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code Section 65962.5 or other known sites.

The Alternative 1 transmission line alignment would not be on any known contamination sites pursuant to Government Code Section 65962.5 (DTSC Envirostor database, 2010), and no known hazardous materials sites that pose a potential contamination threat were identified within 0.25 mile of the centerline (TIS FirstSearch reports, 2010).

CEQA Significance

Based upon a limited investigation, no impacts related to the excavation and mobilization of known hazardous materials associated with Alternative 1, including the new 230 kV double circuit transmission line and Project components common to all action Alternatives, are anticipated to occur. No mitigation is required.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Site excavation activities for the Alternative 1 transmission line have the potential to unearth and mobilize unknown preexisting contaminants, presenting a potential health risk for workers and the public, which would be a significant impact.

As with the Alternative 2 transmission line, GP-39 (Observe Excavated Soil for Signs of Contamination) would be implemented to address contamination indicators observed during Project grading and excavation activities. The construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed in accordance with GP-7, the Project Soil Management Plan.

In addition, measures outlined in GPs 39 and 7 do not address documentation and agency reporting requirements if laboratory testing results conclude that regulatory limits for a particular hazardous substance are exceeded. Therefore, HAZ-2 would be implemented to ensure proper interpretation, documentation, and reporting of laboratory data results by qualified persons.

CEQA Significance

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, HAZ-2 would be implemented in addition to GPs 41 and 7 to reduce the impact from encountering unknown contamination to a less-than-significant level.

Project operation activities would contaminate soil or groundwater in the area, potentially exposing workers and/or the public to contaminated or hazardous materials at levels which exceed those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR 1910 (Criterion HAZ-3)

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Operation of the Alternative 1 transmission line would result in the same types of impacts as the Alternative 2 transmission line regarding Criterion HAZ-3. Maintenance activities for this transmission line would be the same as for Alternative 2 transmission line and would require the periodic use of vehicles and equipment that could accidently discharge fuels, solvents, oils, and lubricating fluids (i.e., transmission fluid, brake fluid, hydraulic fluid, grease) into the surrounding soil or groundwater.

Implementation of GP-3 (Hazardous Materials and Hazardous Waste Management Plan), and GP-18 (Maintain Hazardous Materials Spill Management Kits) would minimize the potential for impacts related to the improper storage, use, handling, or accidental spillage of such materials.

__CEQA Significance__

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3 and 18 would reduce the potential for contamination to occur as a result of accidental spills during maintenance operations. Implementation of these GPs would also ensure prompt and adequate clean-up and removal of spilled materials, resulting in limited to no human and/or environmental exposure to Project-related hazardous substances. Impact HAZ-5 would be less than significant with no mitigation required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

As with the Alternative 2 transmission line, approved herbicides would be utilized in combination with mechanical clearing methods to remove and prevent select vegetation within the ROW. In the ANF, herbicides would be applied to bare soil using hand sprayers to prevent new growth of vegetation near the base of Project structures (lattice towers, poles).

Airborne or physical exposure to herbicides applied during operation and maintenance of the Project could potentially impact workers or members of the public that enter affected portions of the ROW.

To prevent environmental contamination and protect worker health and safety, LADWP contractors would follow protocol identified in BIO-2 (see Section 4.3.1, Biological Resources).

__CEQA Significance__

Under Alternative 1, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of BIO-2 would reduce the potential for environmental contamination resulting from an accidental spill of Project herbicide residuals, and would protect workers and the public from exposure to such materials. Impact HAZ-6 would be adverse but less than significant.

Alternative 2: LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

The Project would result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24 (Criterion HAZ-1)

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Project construction would involve the limited transport, use, and disposal of hazardous materials that could be harmful to the health and safety of construction personnel, the public, and the environment. Hazardous materials required to fuel and lubricate construction vehicles and heavy motorized equipment would include gasoline, diesel fuel, transmission/brake/hydraulic fluids, solvents, motor oils, and lubricating grease. Some of these liquids (e.g., gasoline) may be contained onsite in storage drums or above-ground storage tanks during the construction period. On a temporary basis, transmission line construction would also involve the limited use of other potentially hazardous materials such as welding materials, propane, canned spray paint, paint thinner, battery acid (in construction vehicles), insect repellant, and air tool oil.

As part of the design of the Alternative 2 transmission line, LADWP would implement several environment-related project plans including GP-3 (Hazardous Materials and Hazardous Waste Management Plan), GP-6 (Health and Safety Plan), and GP-5 (Storm Water Pollution Prevention Plan [SWPPP]). Implementation of these plans would minimize the likelihood of Project-related spills, and would ensure proper waste handling procedures, spill contingencies, and Treatment, Storage and Disposal Facility training in accordance with the OSHA Hazard Communication Standard and 22 CCR.

During the construction period, the storage and use (i.e., refueling or changing) of vehicle/equipment fluids and oils would be confined to approved staging and construction yards through implementation of GP-19. In addition, all construction vehicles would be equipped with a hazardous materials spill kit per GP-18 (Maintain Hazardous Materials Spill Management Kits and Materials) requirements.

Implementation of HAZ-1 would enforce adherence to Project plans, including GPs 3 through 5, 18, and 19, during the construction period.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3 and 5 would minimize the potential for accidental spills of hazardous materials during construction, and GP 19 would limit the use of such materials to designated areas. In the event of an accidental spill, implementation of GPs 3, 4 and 18 would ensure proper clean-up and disposal of spilled materials, thereby reducing or eliminating human and environmental exposure.

Implementation of HAZ-1 would enforce adherence to GPs 3 through 5, 18 and 19 throughout the construction period, adequately reducing impacts associated with the improper storage, transport, and use of hazardous material to less than significant.

Impact HAZ-2: The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors.

No existing or planned schools were identified within one quarter-mile of the proposed Alternative 2 transmission line centerline.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, no impacts to local schools related to the unauthorized release of hazardous emissions or other Project contaminants would result. No mitigation is required.

Project activities would release contaminants currently existing in the soil, potentially exposing humans or other sensitive receptors (Criterion HAZ-2)

Impact HAZ-3: Project construction activities (i.e., site excavation or grading) could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code Section 65962.5 or other known sites.

Government Code Section 65962.5 pertains to a list of facilities that generate, transport, store, or dispose of hazardous waste and may be subject to the RCRA corrective action program. Based on a review of the Department of Toxic Substances Control (DTSC) Envirostor database, the Proposed Action ROW would not be on any known contamination sites listed pursuant to Government Code Section 65962.5. Hazardous materials sites identified within 0.25 mile of the proposed ROW include a tire waste dumpsite operated by an auto dismantler in Kern County (Dollahite Auto Wrecking), and an underground storage tank (UST) used for gasoline storage in the unincorporated community of Green Valley (TIS FirstSearch Reports, 2010). Neither of these sites is currently undergoing or known to require RCRA corrective action.

CEQA Significance

Based upon a limited investigation, which considered the distances of the known sites to Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, the nature of the sites, and the nature of the proposed construction activities, no impacts related to the excavation and mobilization of known hazardous materials are anticipated to occur. No mitigation is required.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Previously unidentified hazardous materials could be encountered or unearthed during construction of the Project, potentially releasing them into the environment.

As noted above, data obtained from the Track Info Services (TIS) FirstSearch Reports identified two hazardous materials sites within 0.25 mile of the Project area. In addition, current and historical uses of properties crossed by the centerline include other utilities and transportation infrastructure (i.e., railroads, freeways, and local roadways), which could contain petroleum-related contaminants, and agricultural uses, which could contain pesticides, herbicides, and fumigants. Residual traces of such contaminants remaining in the soil could pose a potential health risk to workers and/or the public through airborne or physical exposure. Contaminants related to these land uses or the undocumented releases of hazardous materials from other nearby sites could have migrated through the groundwater to the Project area, and could be unearthed during Project excavation activities, which would be a significant impact.

Since some types of contamination are detectable by visual and olfactory observation, GP-39 (Observe Excavated Soil for Signs of Contamination) would be implemented to address common contamination indicators (e.g., an obvious sheen, strong odor, or abnormal stains to soil or groundwater) observed during Project construction activities. Per GP-39, the Project construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed in accordance with GP-7, the Project Soil Management Plan.

However, measures outlined in GPs 39 and 7 do not specify the reporting requirements for these incidents, including documentation of verification sampling results, and measures taken for reporting potentially contaminated sites to the USFS (if on USFS lands) or BLM (if on BLM lands). Misinterpretation of laboratory data or the improper documentation and reporting of data results could result in the improper handling or disposal of contaminated materials, resulting in further environmental contamination and/or human exposure to hazardous substances, which would be a significant impact. Therefore, implementation of HAZ-2 would be necessary to reduce the impact from encountering unknown contamination to less than significant.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of HAZ-2 would be required in addition to GPs 39 and 7 to ensure proper interpretation, documentation, and reporting of laboratory data results by qualified persons, thereby reducing the impact from encountering unknown contamination to less than significant.

Project operation activities would contaminate soil or groundwater in the area, potentially exposing workers and/or the public to contaminated or hazardous materials at levels which exceed those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR 1910 (Criterion HAZ-3)

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Project operations would require the periodic transport, use, or disposal of hazardous liquids and solids that could pose a potential risk to the public or the environment if improperly used or inadvertently released. The limited frequency of these activities would not be considered routine, under the Hazardous Materials Transportation Uniform Safety Act. Scenarios that could present a risk in the Project area resulting from the presence of hazardous substances include: (1) the contamination of surface and/or groundwater; (2) the release of hydrocarbons associated with oils into the air; and (3) the risk of fire resulting from the accidental ignition of combustible petroleum products or other flammable chemicals.

During Project operations, soil, surface and/or groundwater contamination could result from an accidental spill or seepage of liquids used for vehicle or equipment fueling and lubrication.

Implementation of GP-3 would minimize potential contamination impacts related to the improper storage, use, handling, or accidental spillage of such material by requiring enforcement of a Project Emergency Response Plan, and a Hazardous Materials and Hazardous Waste Management Plan.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3 and 18 would reduce the potential for contamination to occur as a result of accidental spills during Alternative 2 maintenance operations. Implementation of these GPs would also ensure prompt and adequate remediation of spilled materials, resulting in limited to no human and/or environmental exposure to Project-related hazardous substances. Impact HAZ-5 would be less than significant and no mitigation is required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

On NFS lands, approved herbicides would be utilized in combination with mechanical clearing methods to remove and prevent select vegetation within the ROW. Herbicides would be applied to bare soil to prevent new growth of plant species near the base of Project structures (lattice towers, poles).

In cleared areas, hand sprayers would be used for application to restrict the herbicide chemicals to within a 10-foot radius of Project structures.

Airborne or physical exposure to herbicides applied during operation and maintenance of the Proposed Action could potentially impact workers or members of the public that enter affected portions of the ROW.

To prevent environmental contamination and protect worker health and safety, LADWP contractors would follow BIO-2 (see Section 4.3.1, Biological Resources). Project contractors applying the herbicides would follow the manufacturer's recommendations for mixing and applying the chemicals, and only herbicides that are classified by the EPA as Low Toxicity would be used for the Project. Workers would also wear protective clothing and respiratory protection during chemical mixing and application, per the manufacturer's instructions. Maintenance workers could also inhale dust particles containing residual herbicides that remain in soil after recent applications. However, considering the contractor's adherence to BIO-2, the low toxicity of herbicides used, and the infrequent access of workers and the public to exposed areas, the presence of herbicide residuals in the Project area would not pose a significant adverse health risk.

CEQA Significance

Under Alternative 2, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of BIO-2 would reduce the potential for environmental contamination resulting from an accidental spill of Project herbicide residuals, and would protect workers and the public from exposure to such materials. As such, Impact HAZ-6 would be adverse but less than significant.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

The Project would result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24 (Criterion HAZ-1)

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Ground construction methods utilized for the Alternative 2a transmission line would be the same as methods used for the Alternative 2 transmission line; these activities would require the limited transport, use, and disposal of the same hazardous materials identified for Alternative 2, which could result in soil or groundwater contamination, toxic emissions, or an increased risk of fire ignition.

Heavy lift helicopters would also be utilized for transmission line construction activities (i.e., tower and material transport, wire-stringing) on four miles of a seven-mile segment of the Alternative 2a transmission line in the ANF. Accidental spills or leaks of petroleum products or other lubricants during the operation or refueling of Project helicopters could contaminate soil and groundwater. Helicopter landing and refueling activities would be limited to approved helicopter staging areas, marshalling yards, and local airports in accordance with GP-20 (Refueling of Helicopters Utilized for Project Construction).

As with the Alternative 2 transmission line, LADWP would implement GP-3 (Hazardous Materials and Hazardous Waste Management Plan), GP-4 (Health and Safety Plan), GP-5 (Storm Water Pollution Prevention Plan), GP-18 (Maintain Hazardous Materials Spill Management Kits), and GP-19 (Refueling/Lubrication of Construction Vehicles and Equipment) as part of the Project design.

To further reduce potential impacts related to hazardous materials spills during construction, HAZ-1 would be implemented.

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of HAZ-1 would enforce GPs 3 through 5, 18, 19 and 20 and would reduce Impact HAZ-1 to less than significant.

Impact HAZ-2: The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors.

No existing or planned schools have been identified within one quarter-mile of the Alternative 2a transmission line centerline.

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, no impacts to local schools related to the unauthorized release of hazardous emissions or other contaminants would result. No mitigation is required.

Project activities would release contaminants currently existing in the soil, potentially exposing humans or other sensitive receptors (Criterion HAZ-2)

Impact HAZ-3: Project construction activities (i.e., site excavation or grading) could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code Section 65962.5 or other known sites.

The Alternative 2a transmission line alignment would not be on any known contamination sites pursuant to Government Code Section 65962.5 (DTSC Envirostor database, 2010). Outside of the ANF, known hazardous materials sites within 0.25 mile of the Alternative 2a transmission line route would be the same as for the Alternative 2 transmission line and would include a tire waste dumpsite in Kern County (TIS FirstSearch Reports, 2010). Within the ANF, no known hazardous materials sites were identified within 0.25 mile of the Alternative 2a transmission line centerline (TIS FirstSearch Reports, 2010).

CEQA Significance

Based upon a limited investigation, which considered the distances of the known sites to Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, the nature of the sites, and the nature of the proposed construction activities, no impacts related to the excavation and mobilization of known hazardous materials are anticipated to occur. No mitigation is required.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

Due to helicopter construction in the ANF, less ground disturbance and a reduced likelihood of encountering unforeseen contaminants would occur under for Alternative 2a transmission line relative to the Alternative 2 transmission line. Still, the potential exists for undocumented surface or subsurface contaminants to be encountered and mobilized during excavation, presenting a potential health risk for workers and the public and a significant impact.

As with the Alternative 2 transmission line, GP-39 (Observe Excavated Soil for Signs of Contamination) would be implemented to address contamination indicators observed during Project grading and excavation activities. Per GP-39, the construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed in accordance with GP-7, the Project Soil Management Plan.

In addition, implementation of HAZ-2 would be necessary to ensure proper documentation and reporting of laboratory data results by qualified persons, reducing the impact from encountering unknown contamination to a less-than-significant level.

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, HAZ-2 would be implemented in addition to GPs 39 and 7 to reduce the impact from encountering unknown contamination to less than significant.

Project operation activities would contaminate soil or groundwater in the area, potentially exposing workers and/or the public to contaminated or hazardous materials at levels which exceed those permitted by California Occupational Safety and Health Administration (Cal-OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR 1910 (Criterion HAZ-3)

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Maintenance operations for the Alternative 2a transmission line would require the limited use, transport, and disposal of hazardous and/or flammable materials (e.g., vehicle/equipment fuels and oils) along the transmission line ROW that could pose a potential health and safety risk to the public or contamination hazard to the environment if improperly used or inadvertently released.

LADWP plans to avoid and/or limit accidental spills of hazardous substances and related impacts through implementation of GP-3 (Hazardous Materials and Hazardous Waste Management Plan), and GP-18 (Maintain Hazardous Materials Spill Management Kits).

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, incorporation of GPs 3 and 18 into the Project design would reduce the potential for contamination related to improper storage, use, handling, or disposal of hazardous materials during maintenance operations, thereby eliminating or reducing human and environmental exposure to hazardous substances. Related impacts would be less than significant with no mitigation required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

As with the Alternative 2 transmission line, approved herbicides would be utilized in combination with mechanical clearing methods to remove and prevent select vegetation within the ROW. In the ANF, herbicides would be applied to bare soil using hand sprayers to prevent new growth of vegetation near the base of transmission structures (lattice towers, poles).

Airborne or physical exposure to herbicides applied during operation and maintenance activities could potentially impact workers or members of the public that enter affected portions of the ROW.

To prevent environmental contamination and protect worker health and safety, LADWP contractors would follow protocol identified in BIO-2 (see Section 4.3.1, Biological Resources).

CEQA Significance

Under Alternative 2a, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, BIO-2 would be implemented to reduce the potential for environmental contamination resulting from an accidental spill of herbicide residuals, and would protect workers and the public from exposure to such materials. As such, Impact HAZ-6 would be adverse but less than significant.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

The Project would result in soil contamination, including flammable or toxic gases, at levels exceeding federal, State, or local hazardous waste limits established by 40 CFR 261 and Title 22 CCR 66261.21, 66261.22, 66261.23, and 66261.24 (Criterion HAZ-1)

Impact HAZ-1: Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction.

Implementation of the Alternative 3 transmission line would result in the same types of impacts as for the Alternative 2 transmission line regarding Criterion HAZ-1. Construction of this Alternative would involve the same construction methods as the Alternative 2 transmission line; however, the Alternative 3 transmission line would require greater use of the same types of hazardous materials due to the length of the transmission line route. This could incrementally increase the potential for soil or groundwater contamination to occur as a result of an accidental spill or unauthorized release.

During the temporary construction period, the storage and use (i.e., refueling or changing) of vehicle/equipment fluids and oils would be confined to approved staging and construction yards in accordance with GP-19.

GP-3 (Hazardous Materials and Hazardous Waste Management Plan), GP-4 (Health and Safety Plan), and GP-5 (Storm Water Pollution Prevention Plan) would also be incorporated into the

Project design to minimize potential spills, and to ensure proper hazardous materials handling, storage, transport, and spill contingency procedures by construction personnel. GP-18 (Maintain Hazardous Materials Spill Management Kits) would provide construction personnel with consistent access to spill management kits to ensure prompt clean up of an unintentional spill.

As with the Alternative 2 transmission line, HAZ-1 would be implemented to further reduce potential impacts related to hazardous materials spills during construction activities.

CEQA Significance

Although construction of Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, would require more use of hazardous materials required for construction, HAZ-1 would be implemented to ensure worker conformance to Project plans and measures identified in GPs 3 through 5, 18, 19 and 20. This would adequately reduce potentially significant impacts associated with the storage, transport, and use of hazardous materials to less than significant levels.

Impact HAZ-2: The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors.

One planned school site was identified with one quarter-mile of the Alternative 3 transmission line centerline in unincorporated Los Angeles County. The planned site is near 80th Street West and Avenue L-12 in the city of Lancaster. LADWP has committed to implementing GPs 3, 4 and 19, which include development and implementation of an Emergency Release Response Plan and a Health and Safety Plan, as well as detailed information related to the proper transport of materials, containment of materials, and the fueling/maintenance of construction vehicles and equipment.

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3, 4 and 19 would minimize the potential for accidental spills of hazardous materials to occur during construction of Alternative 3. Impacts to local schools related to the unauthorized release of hazardous emissions or other contaminants would be less than significant.

Project activities would release contaminants currently existing in the soil, potentially exposing humans or other sensitive receptors (Criterion HAZ-2)

Impact HAZ-3: Project construction activities (i.e., site excavation or grading) could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code Section 65962.5 or other known sites.

The Alternative 3 transmission line alignment would not be on any known sites pursuant to Government Code Section 65962.5 (DTSC Envirostor database, 2010). Four known hazardous materials sites were identified within 0.25 mile of the Alternative 3 transmission line centerline.

The closest known significantly contaminated site to the Alternative 3 transmission line centerline is the DTSC-monitored Mint Canyon Space Ordnance Systems Facility. This site and all other hazardous materials sites identified within 0.25 mile are down-gradient of the proposed Alternative 3 transmission line centerline. Contaminants related to undetected spills or leaks at these sites are therefore unlikely to have migrated to the Project area and would not pose a potential contamination risk during construction.

CEQA Significance

Based upon a limited investigation, which considered the distances of the known sites to Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, the nature of the sites, and the nature of the proposed construction activities, no impacts are anticipated to occur as the result of known hazardous materials sites creating a significant environmental contamination hazard or hazard to the health of workers or the public. No mitigation is required.

Impact HAZ-4: Project construction activities (i.e., site excavation or grading) could inadvertently release unknown preexisting soil and/or groundwater contaminants.

The presence of hazardous materials in an urban environment is typically higher. The Alternative 3 transmission line excavation activities, particularly those occurring in developed urban areas such as the cities of Lancaster and Palmdale, have the potential to unearth unknown preexisting contaminants, which would be a significant impact.

As with the Alternative 2 transmission line, GP-39 (Observe Excavated Soil for Signs of Contamination) would be implemented to address potential contamination indicators observed during Project excavation activities, and the construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed in accordance with GP-7, the Project Soil Management Plan.

In addition, HAZ-2 would be implemented to ensure proper documentation and reporting of laboratory data results by qualified persons, reducing the impact from encountering unknown contamination to a less-than-significant level.

CEQA Significance

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, HAZ-2 would be implemented in addition to GPs 39 and 7 to ensure proper interpretation, documentation, and reporting of laboratory data results by qualified persons, thereby reducing the impact from encountering unknown contamination to a less-than-significant level.

Project operation activities would contaminate soil or groundwater in the area, potentially exposing workers and/or the public to contaminated or hazardous materials at levels which exceed those permitted by California Occupational Safety and Health Administration (Cal-

OSHA) in CCR Title 8 and the Federal Occupational Safety and Health Administration (OSHA) in Title 29 CFR 1910 (Criterion HAZ-3)

Impact HAZ-5: Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater.

Operation of the Alternative 3 transmission line would result in the same types of impacts as for the Alternative 2 transmission line regarding Criterion HAZ-3. Maintenance activities for this transmission line would be the same as the for the Alternative 2 transmission line and would require the periodic use of hazardous materials (e.g., petroleum products) that could harm workers, the public, or the environment if improperly used or inadvertently released.

Incorporation of GP-3 (Hazardous Materials and Hazardous Waste Management Plan), and GP-18 (Maintain Hazardous Materials Spill Management Kits) into the Project design would minimize the potential for impacts related to the improper storage, use, handling, or accidental spillage of such materials.

CEQA Significance:

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, implementation of GPs 3, and 18 would reduce the potential for contamination to occur as a result of accidental spills during Alternative 3 maintenance operations. Implementation of these GPs would also ensure prompt and adequate clean-up and removal of spilled materials, resulting in limited to no human and/or environmental exposure to Project-related hazardous substances. Impact HAZ-5 would be less than significant and no mitigation is required.

Impact HAZ-6: Herbicides used for vegetation control around towers and other Project facilities could adversely affect the health of maintenance workers or the public.

As with the Alternative 2 transmission line, approved herbicides would be utilized in combination with mechanical clearing methods to remove and prevent select vegetation within the ROW. In the ANF, herbicides would be applied to bare soil using hand sprayers to prevent new growth of vegetation near the base of transmission structures (lattice towers, poles).

Airborne or physical exposure to herbicides applied during operation and maintenance activities could potentially impact workers or members of the public that enter affected portions of the ROW.

To prevent environmental contamination and protect worker health and safety, LADWP contractors would follow protocol identified in BIO-2 (see Section 4.3.1, Biological Resources).

CEQA Significance:

Under Alternative 3, including the new 230 kV double-circuit transmission line and Project components common to all action Alternatives, BIO-2 would be implemented to reduce the potential for environmental contamination resulting from an accidental spill of Project herbicide residuals, and would protect workers and the public from exposure to such materials. As such, Impact HAZ-6 would be adverse but less than significant.

4.2.8 TRAFFIC & TRANSPORTATION

Introduction

Potential impacts of the Proposed Action have been analyzed for transportation infrastructure and operations. The focus of the analysis was on both the potential closure of travel lanes and the direct effects of closures/blockages on other facilities and resources (rail, transit systems, fire department locations and likely access routes, etc.).

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to traffic and transportation are addressed in this analysis:

- Potential for encroachment upon State transportation facilities and local roads
- Increase in traffic due to construction activities in the area

The BLM routes identified in Section 3.2.8 were not included in the traffic analysis as transportation-related impacts to these routes were not identified as an area of concern during the scoping period. As noted in the "Summary of Impact Analysis Results" in Section 4.2.5 (Recreation), the BLM routes would experience Impact R-1 (Construction activities would restrict access to or disrupt activities within established recreational areas). This would occur with Alternatives 1, 2, 2a and 3. BLM route MK0025 is within the existing 230 kV transmission line corridor. BLM routes MK 0040, MK0045, MK0050, MK0051, MK0054, MK0081, MK0082, and MK0105 intersect with or terminate at MK0025. These routes would be temporarily closed when construction activities are occurring at a specific structure pad site, or for conductor stringing between structures. The temporary route closures would last only as long as required to complete construction at a given location. If construction is not occurring along or in proximity to these routes, the routes would remain open. The temporary route closures would require detours and alternate routes to be established to provide access to other BLM routes to the extent possible.

Impact Assessment Methodology

This section provides an overview of the methodology used and the determinations made for traffic impacts along the Proposed Action and Alternative alignments, in terms of both construction and post-construction (maintenance) periods. The analysis consisted of: 1) evaluating specific impacts to study roadway segment points and roadways that would provide access; and 2) broader sensitivity ratings along the alignments, which were the basis for determining impacts along specific lengths of the Alternative routes.

Specific Analysis Locations

The potential effects of Project construction on study area roadway capacity were analyzed as a 50-percent reduction (at all analyzed study roadway segment points) and a 75-percent reduction (excluding two-lane roadways) in roadway capacity. Potential impacts were analyzed at major roadways in the Project area to identify direct impacts based on the level of service (LOS) analysis. LOS is a qualitative measure of traffic operating conditions, whereby a letter grade of "A" through "F" is assigned to a roadway facility based on volumes over a specific time period and the design capacity of that facility over the same period. Twenty-eight roadway segments were analyzed. LOS "D" is the minimum acceptable LOS standard for most of the study area jurisdictions. Therefore, impacts for the study area roadways were examined where LOS "E" and "F" conditions could be caused or worsened by the Project.

Corridor-Based Project Analysis

Sensitivity ratings were developed for transportation resources that could be significantly impacted by the Proposed Action to help determine the sensitivity to the siting and construction of the proposed transmission line. Transportation facilities crossed by the Project would have similar sensitivity to impacts based on the type of facility or resource crossed by the Project, and were therefore analyzed by this specialized methodology.

Sensitivity is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation and maintenance of a transmission line. Sensitivity ratings were assigned to a number of transportation resources within the study area. These ratings were based upon a relative evaluation of the resource's importance and the impact potential that construction and maintenance of a transmission line would have upon that resource for the short-term (construction period) and long-term (operations and maintenance) durations of the Project. The determinations of sensitivity levels included consideration of the following:

- Roadway Classification
- Closures
- Present and Future Uses
- Traffic Volume
- Access

Using the framework defined above, the transportation network crossed by the Project transmission line corridors (including Alternatives) was analyzed and assigned relative sensitivity rating for potential impacts within the Project study area. Sensitivity ratings were categorized as high, moderate or low. Details of the methodology are outlined in the Traffic Technical Report contained in Volume III.

Significance Criteria

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria have been identified to make these conclusions. Impacts would be considered significant and would require mitigation if they would:

Criterion TT1: Exceed LOS standard "D" as established by the congestion management agency for designated roads or highways

Counties and municipalities frequently define acceptable and unacceptable LOS values for all or certain types of roadway facilities within the entity's jurisdiction. The acceptable/unacceptable values are used as guidelines, as key facilities must often be allowed to run at poor LOS for brief periods of the day, to balance the provision of capacity with average traffic conditions.

Criterion TT2: Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)

Criterion TT3: Result in inadequate emergency access

Criterion TT4: Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)

Mitigation Planning

Impacts to transportation/traffic resources are determined by the sensitivity rating and the acceptable and unacceptable LOS capacity reduction along the potentially affected roadway. Therefore, impact levels vary between managing jurisdictions.

High traffic impacts resulting from construction activities would be mitigated by GP-2 (Traffic Control Plan), except along roads where the LOS standard "D" would be exceeded during reconductoring for Alternatives 1, 2, 2a and 3 and also during construction of the new 230 kV line with Alternative 3. This temporary but significant impact cannot be mitigated by GPs or specific mitigation measures. Moderate initial traffic impacts resulting from construction activities would not typically require mitigation as the Project includes a list of GPs that would be implemented as part of the Project under each of the Alternatives. Areas with low impact would not require mitigation measures, due to the insignificance or minor level of impacts caused by the Proposed Action's construction and maintenance activities.

Potential impacts caused by Project operations and maintenance were also considered and would be less than significant, as such impacts are expected to be short-term in duration and would not constitute an extended reduction in transportation system operational capacity since they would not be permanent in nature.

Summary of Impact Analysis Results

This section presents a discussion of impacts for the Proposed Action and Alternatives. Table 4.2.8-1 summarizes impacts to transportation and traffic based on the significance criteria previously discussed.

TABLE 4.2.8-1. IMPACTS IDENTIFIED – TRANSPORTATION AND TRAFFIC

Impact Number	Description
TT-1	Construction activities would exceed LOS standard "D"
TT-2	Construction activities would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)
TT-3	Construction activities would result in inadequate emergency access
TT-4	Construction activities would conflict with adopted policies, plans, or programs supporting alternative transportation

Utilizing the sensitivity ratings, impacts were determined for the construction phase of the Project. All of the Project build Alternatives (Alternatives 1, 2, 2a, and 3) have some "high" impacts based on the sensitivity ratings. Once Project construction is completed, impacts would not be significant as the Project becomes operational and enters the maintenance period.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed in the study area. As a result, conditions of the roadways would remain in their existing states, as no Project-related activities would occur. Specifically, no construction- and/or maintenance-related traffic or road closures would be necessary.

Alternative 1

Exceed a LOS standard established by the congestion management agency for designated roads or highways (Criterion TT1)

Impact TT-1: Construction activities would exceed LOS standard "D"

The only Project construction phase where roadway performance would become worse than LOS "D" under this Alternative would be during reconductoring. Several major roadways would be impacted as noted below:

- Bouquet Canyon Road, west of Sutters Pointe Drive, is a four-lane roadway. It would worsen from LOS "D" to LOS "F" with a 50-percent roadway capacity reduction. With a 75-percent or more reduction, it would worsen further within LOS "F."
- Soledad Canyon Road, west of Reuther Avenue, is a six-lane roadway. It would worsen from LOS "C" to LOS "F" with a 50-percent roadway capacity reduction, and operations would continue to worsen within LOS "F" if capacity is further reduced to 75-percent or more.
- Centre Point Parkway, east of Golden Valley Road, is a two-lane roadway. With a potential roadway capacity reduction of 50 percent, the LOS value would worsen from "B" to "F."
- Golden Valley Road, east of Hope Canyon Road, is a two-lane roadway. Currently, the roadway operates at LOS "F," and with the potential construction impact, operations would continue to worsen within LOS "F."

- Sierra Highway, south of Placerita Canyon Road, is a four-lane roadway. The roadway would worsen to LOS "F" if 75 percent or more of the roadway capacity is reduced during construction.
- Foothill Boulevard, east of Filbert Street, is a two-lane roadway. The existing operations are at LOS "E," and with a 50-percent reduced roadway capacity, it would worsen to LOS "F."
- Roxford Street, west of Telfair Avenue, is a two-lane roadway. Existing operations are at LOS "F," and would worsen with a 50-percent reduction in roadway capacity.
- Laurel Canyon Boulevard, west of Carey Ranch Lane, is a four-lane roadway. It would worsen from LOS "A" to LOS "F" with a 50-percent roadway capacity reduction. Operations would worsen further within LOS "F" with a 75-percent or more reduction in roadway capacity.

Mitigation Measures for Impact TT-1

There are no mitigation measures for the impact to these roadways.

CEQA Significance

There are no mitigation measures that could minimize or prevent these impacts from occurring. Although these impacts would be temporary, they would be considered significant.

Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (Criterion TT2)

Impact TT-2: Construction activities would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system

Based on the sensitivity ratings, potentially high impacts would occur during the construction phase of this Alternative. The following describes the location of the impacted roads by Project component:

New 230 kV Circuit

- Three-tenths of a mile along the Santa Clarita Transit Route 1 and Supplemental School Day Service Route 636, San Francisquito Canyon Road and Lake Hughes Road.

Reconductoring of BR-RIN Transmission Line

- One half-mile section of SR-58
- Nine-tenths of a mile based on the potential impacts to access at the Tehachapi Hospital and Joshua Middle School along Oak Creek Road, Backus Road, Tehachapi Willow Springs Road, Rosamond Boulevard, and Avenue D/SR-138.

- Seven and six-tenths of a mile based on the potential impacts to Fairmont Road/Neenach Road Johnson Road, Elizabeth Lake Road, and San Francisquito Canyon Road. This includes potential impacts associated with the temporary transmission line.
- Two and one-tenth miles due to the proximity to a more urban area. Potential roadway impacts include: I-5, I-210, I-405, SR-14, Bouquet Canyon Road, San Fernando Road, Sierra Highway, Soledad Canyon Road, Placerita Canyon Road, and Golden Valley Road. Potential impacts to transit include City of Santa Clarita Transit Route 1, 2, 4, 5, City of Santa Clarita Supplemental School Day Service Routes 620, 621, 624, 627, 628, 629, 633, 637, 638, Metro Line 224, and the Metrolink Antelope Valley Line. School facilities that could be impacted due to access issues include Rosedell Elementary School, Jereann Brown High School, and Golden Valley High School. One fire station along Soledad Canyon may also be affected. Also impacted could be Class I and Class II bicycle facilities.

New Haskell Canyon Switching Station

- From the I-210 Freeway and the construction site: Magic Mountain Parkway to McBean Parkway to Copper Hill Drive

Expansion of Barren Ridge Switching Station

- Local Kern County roadways to access the Barren Ridge Switching Station, north of Pine Tree Canyon Road and west of SR-14

New 230 kV transmission line

- One-half mile of a section of SR-58
- Four-tenths of a mile based on the potential impacts to Oak Creek Road and Tehachapi Willow Springs Road.
- Four and three-tenths of a mile based on the potential impacts to Lancaster Road/SR-138, Pine Canyon Road/N2, Lake Hughes Road, and San Francisquito Canyon Road. Additionally, construction may affect access to Neenach Elementary School.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), Impact TT-2 for Alternative 1 would be reduced to a less than significant level for the specific roadway sections.

Result in inadequate emergency access (Criterion TT3)

Impact TT-3: Construction activities would result in inadequate emergency access

Inadequate emergency access is not anticipated to occur under Alternative 1.

CEQA Significance

The implementation of GP-2 (Traffic Control Plan) as part of Alternative 1 would include coordination with emergency service providers to ensure that construction activity and any associated lane closures or traffic impacts would not significantly affect emergency response. As such, Impact TT-3 would be less than significant.

Conflict with adopted policies, plans, or programs supporting alternative transportation (Criterion TT4)

Impact TT-4: Construction activities would conflict with adopted policies, plans, or programs supporting alternative transportation

Conflicts with the City of Santa Clarita bus transit and designated bicycle facilities, which are the prominent alternative transportation modes and programs in the study area, are not anticipated to occur under this Alternative.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), which would include coordination with the City of Santa Clarita to reduce bus service interruption and bicycle facility impacts during construction, Impact TT-4 for Alternative 1 would be less than significant.

Alternative 2: LADWP's Proposed Action

Exceed an LOS standard established by the congestion management agency for designated roads or highways (Criterion TT1)

Impact TT-1: Construction activities would exceed LOS standard "D"

The only Project construction phase where roadway performance would become worse than LOS "D" under this Alternative would be during reconductoring. The same roads and impacts from reconductoring under Alternative 1 would also occur with Alternative 2.

CEQA Significance

There are no mitigation measures that could minimize or prevent these impacts from occurring. Although these impacts would be temporary, they would be considered significant.

Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (Criterion TT2)

Impact TT-2: Construction activities would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system

Based on the sensitivity ratings, potentially high impacts would occur during the construction phase of this Alternative. The impacted roads would be the same as Alternative 1 for the new 230 kV circuit, reconductoring, Haskell Canyon Switching Station, and the expansion of the

Barren Ridge switching station. The new 230 kV transmission line would also impact the following roadways:

New 230 kV transmission line

- One-half mile of a section of SR-58
- Nine-tenths of a mile based on the potential impacts to access at the Tehachapi Hospital and Joshua Middle School along Oak Creek Road, Backus Road, Tehachapi Willow Springs Road, Rosamond Boulevard, and Avenue D/SR-138.
- Seven and six-tenths of a mile based on the potential impacts to Fairmont Road/Neenach Road Johnson Road, Elizabeth Lake Road, and San Francisquito Canyon Road. This includes potential impacts associated with the temporary transmission line.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), Impact TT-2 for Alternative 2 would be reduced to a less than significant level for the specific roadway sections.

Result in inadequate emergency access (Criterion TT3)

Impact TT-3: Construction activities would result in inadequate emergency access

Inadequate emergency access is not anticipated to occur under Alternative 2.

CEQA Significance

The implementation of GP-2 (Traffic Control Plan) as part of this Alternative would include coordination with emergency service providers to ensure that construction activity and any associated lane closures or traffic impacts would not significantly affect emergency response. As such, Impact TT-3 for Alternative 2 be less than significant.

Conflict with adopted policies, plans, or programs supporting alternative transportation (Criterion TT4)

Impact TT-4: Construction activities would conflict with adopted policies, plans, or programs supporting alternative transportation

Conflicts with the City of Santa Clarita bus transit and designated bicycle facilities, which are the prominent alternative transportation modes and programs in the study area, are not anticipated to occur under this Alternative.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), which would include coordination with the City of Santa Clarita to reduce bus service interruption and bicycle facility impacts during construction, Impact TT-4 for Alternative 2 would be less than significant.

Alternative 2a

Exceed a LOS standard established by the congestion management agency for designated roads or highways (Criterion TT1)

Impact TT-1: Construction activities would exceed LOS standard "D"

The only Project construction phase where roadway performance would become worse than LOS "D" under Alternative 2a would be during reconductoring. Several major roadways would be impacted during reconductoring, which would be the same as Alternative 1.

CEQA Significance

There are no mitigation measures that could minimize or prevent these impacts from occurring. Although these impacts would be temporary, they would be considered significant.

Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (Criterion TT2)

Impact TT-2: Construction activities would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system

Based on the sensitivity ratings, potentially high impacts would occur during the construction phase of this Alternative. The impacted roads would be the same as Alternative 2 for the new 230 kV transmission line, 230 kV circuit, reconductoring, Haskell Canyon Switching Station, and the expansion of the Barren Ridge switching station.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), Impact TT-2 for Alternative 2a would be reduced to a less than significant level for the specific roadway sections.

Result in inadequate emergency access (Criterion TT3)

Impact TT-3: Construction activities would result in inadequate emergency access

Inadequate emergency access is not anticipated to occur under Alternative 2a.

CEQA Significance

The implementation of GP-2 (Traffic Control Plan) as part of Alternative 2a would include coordination with emergency service providers to ensure that construction activity and any associated lane closures or traffic impacts would not significantly affect emergency response. As such, Impact TT-3 for Alternative 2a would be less than significant.

Conflict with adopted policies, plans, or programs supporting alternative transportation (Criterion TT4)

Impact TT-4: Construction activities would conflict with adopted policies, plans, or programs supporting alternative transportation

Conflicts with City of Santa Clarita bus transit and designated bicycle facilities, which are the prominent alternative transportation modes and programs in the study area, are not anticipated to occur under Alternative 2a.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), which would include coordination with the City of Santa Clarita to reduce bus service interruption and bicycle facility impacts during construction, Impact TT-4 for Alternative 2a would be less than significant.

Alternative 3

Exceed a LOS standard established by the congestion management agency for designated roads or highways (Criterion TT1)

Impact TT-1: Construction activities would exceed LOS standard “D”

Under Alternative 3, roadway performance would become worse than LOS “D” during construction of the new 230 kV transmission line and reconductoring. The impacted roads would be the same as Alternative 1. The new 230 kV transmission line would also impact the following roadways:

- Bouquet Canyon Road, north of Esquerra Road, is a two-lane roadway. With a potential roadway capacity reduction of 50-percent, the segment LOS value would worsen from “B” to “F.”
- Sierra Highway, north of Davenport Road, is a two-lane roadway. With a potential roadway capacity reduction of 50-percent, the segment LOS value would worsen from “A” to “E.”

Mitigation Measures for Impact TT-1

There are no mitigation measures for the impact to these roadways.

CEQA Significance

There are no mitigation measures that could minimize or prevent these impacts from occurring. Although these impacts would be temporary, they would be considered significant.

Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (Criterion TT2)

Impact TT-2: Construction activities would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system

Based on the sensitivity ratings, potentially high impacts would occur during the construction phase of this Alternative. Impacts to transportation resources would occur with all of the Project components. Under this Alternative, the impacted roads would be the same as Alternative 1 for the new 230 kV circuit, new Haskell Canyon switching station and expansion of the Barren Ridge switching station. The following describes the location of the impacted roads for the construction of the new 230 kV transmission line as well as reconductoring:

New 230 kV Transmission Line

- One-half mile of SR-58
- Two-tenths of a mile to Avenue I and Avenue J
- One and one-tenth of a mile along Goode Hill Road, Sierra Highway, Elizabeth Lake Road and Bouquet Canyon Road. Additionally construction may affect City of Santa Clarita Transit Route 4 and access to Highland High School

Reconductoring of BR-RIN Transmission Line

- One half-mile of SR-58
- Two and one-tenth miles due to the proximity to a more urban area. Potential roadway impacts include: I-5, I-210, I-405, SR-14, Bouquet Canyon Road, San Fernando Road, Sierra Highway, Soledad Canyon Road, Placerita Canyon Road, and Golden Valley Road. Potential impacts to transit include City of Santa Clarita Transit Route 1, 2, 4, 5, City of Santa Clarita Supplemental School Day Service Routes 620, 621, 624, 627, 628, 629, 633, 637, 638, Metro Line 224, and the Metrolink Antelope Valley Line. School facilities that could be impacted due to access issues include Rosedell Elementary School, Jereann Brown High School, and Golden Valley High School. One fire station along Soledad Canyon may also be affected. Also impacted could be Class I and Class II bicycle facilities.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), Impact TT-2 for Alternative 3 would be reduced to a less than significant level for the specific roadway sections.

Result in inadequate emergency access (Criterion TT3)

Impact TT-3: Construction activities would result in inadequate emergency access

Inadequate emergency access is not anticipated to occur under this Alternative.

CEQA Significance

The implementation of GP-2 (Traffic Control Plan) as part of Alternative 3 would include coordination with emergency service providers to ensure that construction activity and any associated lane closures or traffic impacts would not significantly affect emergency response. As such, Impact TT-3 for Alternative 3 would be less than significant.

Conflict with adopted policies, plans, or programs supporting alternative transportation (Criterion TT4)

Impact TT-4: Construction activities would conflict with adopted policies, plans, or programs supporting alternative transportation

Conflicts with the City of Santa Clarita bus transit and designated bicycle facilities, which are the prominent alternative transportation programs in the study area, are not anticipated to occur under Alternative 3.

CEQA Significance

With the implementation of GP-2 (Traffic Control Plan), which would include coordination with the City of Santa Clarita to reduce bus service interruption and bicycle facility impacts during construction, Impact TT-4 for Alternative 3 would be less than significant.

Summary and Comparison of Alternatives

Based on the Alternatives analyzed, the Alternative that would be likely to produce the least amount of high traffic impacts within the study area is Alternative 2a.

4.2.9 VISUAL RESOURCES

Introduction

Visual resource impacts would result from the construction, operation and maintenance of the Project, and would be caused by the line being seen from sensitive viewpoints, from the effects to the aesthetic values of the landscape, and from the effects to the Scenic Integrity Objectives (SIOs) of the ANF (SIO Compliance). Impacts to views would be the highest when viewers are identified as being sensitive to change in the landscape (i.e., the proposed new 230 kV double-circuit transmission line), and their views are focused on and dominated by the change. The transmission line would be dominant to the landscape (and result in diminished Scenic Integrity levels on the ANF) when viewed from immediate foreground views or when the viewer is subordinate to the transmission line and the Project would be skylined along ridgelines.

The impact assessment on the ANF is based on the methods found in the USFS *Landscape Aesthetics: A Handbook for Scenery Management* (USFS 1995) (SMS Handbook). The visual analysis on the ANF examined ANF Land Management Plan Standards and compliance of the Project with the ANF SIOs.

The BLM Contrast Rating process found in the BLM's 8400 Series Visual Resources Manual (BLM 1986a) forms the basis of the impact assessment for the private lands and public lands managed by the BLM.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, federal, State, and local agencies and the public were invited to participate in the scoping process from April through May 2008. Issues continued to be identified and refined since the public scoping process during other public meetings and outreach activities leading to the preparation of the Draft EIS/EIR. The following areas of concern related to visual resources are addressed in this analysis:

- Visual impacts to views from homes, communities, and businesses
- Impacts to views of public spaces like parks, trails, the ANF, the Pacific Crest National Scenic Trail, and the Antelope Valley California Poppy Reserve
- Possible visual impacts to scenic highways and byways
- Red Rock Canyon State Park was identified as an issue during scoping, although the Project Alternatives would not be seen from the park
- Impacts to the SIOs on the ANF

Impact Assessment Methods

The visual resources inventory process and the existing visual condition of the landscape that would be affected by the Proposed Action and Alternatives are described in Chapter 3.

The visual impact analysis was supported by using Environmental Systems Research Institute ArcInfo GIS software to model the visible areas, to prepare maps and document data tables of visual impacts, and otherwise document the effects of the Project. Visibility from sensitive viewpoints (and viewpoints of high concern on the ANF) were mapped using a GIS model that "looked out" from the viewpoints over a digital elevation model (DEM) of the terrain created from USGS digital elevation mapping to establish what portion of the landscape would be visible from the selected viewpoints. Seen areas were mapped on the ANF with data provided by the USFS.

Inventory maps were developed from existing visual inventory data and mapping available from the BLM and the ANF, and the Project mapping prepared for vegetation communities, recreation sites, and land uses. Estimates of ground disturbance were used to help assess Project disturbance and impacts. Likewise, the vegetation and soils mapping contributed to the impact assessment process by helping determine clearing requirements and access roads. The visual impacts that would result from the construction and operation of a 230 kV transmission line would normally be direct, adverse, and long-term (also refer to the Visual Resources Technical Report in Volume III).

Impact Level

Initial impact levels were identified for the following visual resources:

- Residential views
- Views from high sensitivity recreation and preservation viewpoints and linear features and high sensitivity cultural sites listed on the National Register of Historic Places
- Views to high sensitivity travel routes (e.g., designated scenic roads)
- Scenic values on private lands and public lands managed by the BLM
- Compliance with the established SIO levels on the ANF

Visual Contrast

To determine potential visual impacts, contrast levels were identified. Visual contrast is defined as the degree of change to the landscape that would be perceived without regard to specific viewpoints or viewing conditions. How the visual changes are seen from sensitive viewpoints determines the viewer impacts and compliance with SIOs on the ANF. Contrast is defined as the change in form, line, color, texture, scale, and landscape position between the Proposed Action (or Alternatives) and its landscape setting. Contrast levels are characterized in this analysis as strong, moderate, or weak.

Visual absorption capability (VAC), the USFS system used to denote relative ability of a landscape to accept human alterations without loss of character of scenic quality, was referenced to help determine the dominance of visual impacts of the Proposed Action and Alternatives to the High and Moderate SIOs established on the ANF. The inventory factors for determining VAC are slope, vegetative cover, and soils and geology.

The BLM contrast rating system considers the level of disruption an alteration would cause to the landscape and is referenced in this analysis to describe the change to the landscape on all private lands and the public lands managed by the BLM. The contrast rating system analyzes the contrast (or change) created between the landform/water features, vegetative features, and structural features of the Project and the existing landscape.

Visual contrast levels on private lands and public lands managed by the BLM were assigned to the landscapes inventoried within the study area through the analysis of landform, vegetation, and structure contrast (see Visual Resources Technical Report, Table 13). Three levels (weak, moderate, and strong) are used to describe the potential visual contrasts that would result from the construction and operation of the proposed transmission lines and substations. The Project contrasts, along with the elements of VAC, were used to determine the visual impacts to the SIOs on the ANF. Simulations were prepared to support the analysis of impacts, and to verify and substantiate the magnitude of Project effects of the Alternatives. For this analysis, contrast was determined by a combination of three contrast factors: landform, vegetation, and structure contrast. Each of these contrast components is described below.

Landform contrast is created by alteration of landform patterns, exposure of soil, erosion scars, slumping, and other disturbances due to the Project that are uncharacteristic of the natural landscape. Landform contrast is determined by the degree and duration of ground disturbance due to access roads and construction and soil erosion potential as defined and mapped by the Natural Resources Conservation Service soil surveys. Strong landform contrast levels typically occur in areas with high levels of ground disturbance where new roads would be constructed in steep terrain while weak landform contrast levels typically occur in areas with low levels of ground disturbance where existing roads may be used for access. High erosion potential may increase soil exposure in disturbance areas and thus increase the potential for strong landform contrast levels. Low erosion potential may limit soil exposure and thus limit landform contrast to moderate or weak levels. Refer to the Visual Resources Technical Report, Table 9. Refer to Chapter 2 for the ground disturbance assumptions.

Vegetation contrast is the change in vegetation cover and patterns that would result from clearing required for conductor clearance, road construction and improvements. Vegetation contrast is determined by the diversity, complexity and density of vegetation types and the vegetation clearing required for road construction and improvements. Strong vegetation contrast levels occur in areas where extensive clearing is required that would be highly visible and vegetation is uniform, dense, slow to recover, and may not be allowed to re-grow due to height restrictions and safety constraints. Weak vegetation contrast levels occur in areas where vegetation cover is lacking or is sparse, has a high level of recoverability, is visually compatible with transmission lines and where little vegetation clearing is required. Refer to the Visual Resources Technical Report, Table 11.

Structure contrast/dominance examines the compatibility of transmission facilities with the existing landscape. Structure contrast would be greatest where there are no other structures (e.g., buildings, existing utilities) in the landscape. For the most part, structure contrast in the study corridor is determined by the presence or absence of existing parallel transmission lines. Existing structures were compared to evaluate levels of contrast that would result from construction and operation of the 230 kV transmission line on private and BLM lands. For example, a new 230 kV steel lattice tower next to an existing 230 kV steel lattice tower would create a weak contrast, or little structure change to the existing landscape, whereas a new 230 kV steel lattice tower next to an existing 161 kV wood H-frame structure and transmission line would create a moderate contrast, because the 230 kV line and structure are larger and bulkier than the 161 kV line and structure. The difference in structure contrast level is due to both the difference in heights and the substantial difference in appearance between the structures. Refer to the Visual Resources Technical Report, Table 12.

Structure dominance was used in place of structure contrast on ANF lands. For the purposes of this study and in order to account for the ANF's desire to prevent the proliferation of transmission related infrastructure on ANF lands, structure dominance was assumed to be high regardless of the presence of existing transmission lines or other related infrastructure. When combined with landform and vegetation contrast, overall contrasts were determined on the ANF as well. Overall contrast on the ANF was determined by combining landform and vegetation contrasts with structure dominance. The resulting ANF Overall Contrast was compared with high concern viewpoint visibility to determine resulting Scenic Integrity along the Project Alternatives. Refer to the Visual Resources Technical Report, Table 15, and the Contrast, Scenic Attractiveness Impacts, and Resulting Scenic Integrity Map in Volume V.

Visual Impact Levels and Significance Criteria

To determine potential visual impacts and compliance with SIOs, the contrast levels were overlaid with the visibility and distance zones from sensitive viewpoints and viewpoints of high concern on the ANF (i.e., residences, recreation areas and travel routes) and with the scenic values on private lands and the public lands managed by the BLM (i.e., scenic attractiveness and visual quality). Compliance with SIOs was determined by estimating resulting Scenic Integrity on the ANF by analyzing the effects of the Project from the identified viewpoints of high concern.

The impact levels were recorded in one-tenth (0.1) mile increments along each Alternative, and impact maps were prepared. Potential impacts were also recorded in data tables for each impact level change along each Alternative. Each potential impact was documented, and specific mitigation measures were recommended where effective to reduce visual impacts (see Visual Resources Technical Report Appendix E). The impacts remaining after applying mitigation are referred to as residual impacts, and the resulting Scenic Integrity was used to determine compliance with SIOs. Tables 17 and 18 in the Visual Resources Technical report document the methods used to determine potential impacts to scenic values (i.e., scenic attractiveness and visual quality) and sensitive viewers for private lands and public lands managed by the BLM. The methods to assess compliance with the SIOs on the ANF are also documented in the Technical Report.

Wherever a potential impact was identified within the immediate foreground distance zone of 0 to 500 feet (and 0 to one half mile on the ANF to be consistent with SMS), it was assessed as an impact that cannot be effectively mitigated due to the dominance of the proposed 230 kV transmission structures at that distance. Generally, strong visual contrasts in the landscape viewed from high sensitivity viewpoints (high level of concern on the ANF) within the immediate foreground and foreground distance zones would result in high impacts or non-compliance with SIOs of High and Moderate. Visual impact levels generally get lower as visual contrasts become weaker or as the distance from the viewpoint increases. These impacts, utilized on private and BLM lands, are defined as follows:

High – High potential visual impact levels for sensitive viewpoints would result from all levels of visual contrast associated with the presence of the transmission line and vegetation removal and/or exposure of contrasting soil/rock color from ground disturbing activities that are visible within the immediate foreground distance zone, and from strong visual contrast in the foreground distance zone. High potential visual impact levels for scenic attractiveness would result from strong or moderate visual contrast in areas of Class A scenic quality.

Moderate – Moderate potential visual impacts for sensitive viewpoints would result from moderate and weak levels of visual contrast in the immediate foreground distance zone and strong visual contrast in the middleground distance zone. Moderate potential visual impact levels for scenic quality would result from weak visual contrast in areas of Class A scenic quality, strong or moderate contrast in areas of Class B scenic quality, and strong contrast is areas of Class C scenic quality.

Low – Low potential visual impacts for sensitive viewpoints and high concern levels on the ANF would result from moderate or weak levels of visual contrast in the middleground distance zone and all levels of visual contrast in the background distance zone. Low potential visual impact levels for scenic quality would result from weak visual contrast in areas of Class B scenic quality and from moderate or weak visual contrast in areas of Class C scenic quality.

Compliance with SIOs on the ANF

The SMS was used to determine adverse effects that would result to the established SIOs from the Proposed Action and its Alternatives within the ANF. The analysis was done from viewpoints of high concern identified by the ANF at distances of up to eight miles from the Alternatives. The Scenic Integrity levels that would occur as a result of Project were compared with the established ANF SIOs, and areas of non-compliance were determined for each Alternative. The "underachievement" of the SIO, or drop in Scenic Integrity from SIO in levels, was determined in part to identify where a Project-specific Plan Amendment would be necessary. The Project would be dominant regardless of existing infrastructure, and would typically create Unacceptably Low or Very Low Scenic Integrity as viewed in the immediate foreground or foreground or middleground. Refer to Tables 14 and 15 in the Visual Resources Technical Report. Refer to the Contrast, Scenic Attractiveness Impacts, and Resulting Scenic Integrity Map located in Volume V.

Chapter 2 of the SMS Handbook (page 2-4) states, "The frame of reference for measuring achievement of scenic integrity levels is the valued attributes of the existing landscape character being viewed. In Natural or Natural appearing character this is limited to natural or natural appearing vegetative patterns and features, water, rock and landforms. Direct human alterations may be included if they have become accepted over time as positive landscape character attributes."

Table 4.2.9-1 below from the SMS Handbook provides a summary of integrity level descriptions. This table was used in conjunction with seen areas and structure dominance analysis to determine the scenic integrity levels that would result from the Project. The desired conditions (including the desired landscape character) described for each Landscape Character Place in the ANF LMP were referenced to identify the valued landscape attributes to assess when determining the levels of impact (i.e., changes to the landscape character within each Landscape Character Place).

TABLE 4.2.9-1. SCENIC INTEGRITY SUMMARY MATRIX

Criteria for Scenic Integrity of the Landscape Character Image/Sense of Place	Scenic Integrity Level					
	Very High	High	Moderate	Low	Very Low	Unacceptably Low
Dominance Landscape Character vs. Deviation	Landscape Character	Landscape Character	Landscape Character	Deviation	Deviation	Deviation
Degree of Deviation From the Landscape Character	None	None Evident	Evident but not dominant	Dominant	Very Dominant	Extremely Dominant

Criteria for Scenic Integrity of the Landscape Character Image/Sense of Place	Scenic Integrity Level					
	Very High	**High**	**Moderate**	**Low**	**Very Low**	**Unacceptably Low**
Intactness of the Landscape Character	Landscape Character Fully Expressed	Landscape Character Largely Expressed	Slightly Altered and Character Expression Moderate	Altered and Low Expression of Character	Heavily Altered and Very Low Expression of Character	Extremely Altered

(SMS Handbook, Page 2-6)

As shown on the Contrast, Scenic Attractiveness Impacts and Resulting Scenic Integrity Map in Volume V of this Final EIS/EIR, foreground views of the Project where strong contrasts occur would result in an Unacceptably Low Scenic Integrity result. Unacceptably Low Scenic Integrity would occur because the Project would result in a deviation from the landscape character and would be extremely dominant, and landscape would appear as extremely altered as seen in the foreground view from High Concern viewpoints. Similarly, Very Low, Low or Moderate resulting Scenic Integrity would result based on seen areas, distance, and Project contrast in accordance with Table 4.2.9-1 and as shown on the map.

The proposed transmission line and existing transmission lines were analyzed to determine how the Proposed Action and Alternatives would affect the scenic integrity levels and what level of scenic integrity would result from approval of the Proposed Action or an Alternative. Transmission lines of the size proposed in this Project are large-scale that are highly visible and typically dominant in foreground views. Ground disturbance levels and potential vegetation removal for access roads, structure locations, and other construction activities were also considered in the impact assessment to SIOs. The greater the ground disturbance level and total area of disturbance, the greater the degree of impact to the landscape and the lower the expression of the existing landscape character are likely to be. Clearing of dense, uniform vegetation types or of vegetation that are slow to mature following revegetation would result in a greater degree of impact from the landscape character than clearing of sparse or fast-growing vegetation types. Uniform clearing of overstory vegetation can create significant change to the landscape that is highly noticeable in the landscape to recreationists and other Forest users.

Page 2-5 of the SMS Handbook identifies the following approaches for meeting integrity levels:

1. Usually the most effective way is to repeat form, line, color, texture, pattern and scale common to the valued landscape character being viewed. For example, in natural or natural appearing landscapes such deviations as created opening can sometimes be added by repeating size, shape, edge effect, surface color and pattern from natural openings common to the landscape character. Adding structures or structure additions to cultural landscapes can sometimes be done by repeating architectural form, line, color, texture, pattern, and scale. If repetition is accurate and well designed the deviation may blend so well the change is not evident (HIGH). It may only borrow well enough to be noticeable but visually subordinate (MODERATE).

2. Another approach is to borrow form, line, color, texture, pattern and scale from similar but different valued landscapes outside that being viewed. For example, it may be possible to borrow the size, shape, edge effect, surface color, and pattern of natural openings and repeat them in continuous textured landscapes where they do not presently exist. For structures in cultural landscapes it may be effective to borrow the dominance elements of different but compatible architectural styles from outside the landscape being viewed. Because these are introduced elements from landscape character outside the one being viewed these are usually evident (MODERATE) if not dominant (LOW).

3. An approach used for the VERY LOW level is to shape and blend only with the land forms. Harvest unit boundaries, for example, would follow draws where low branched trees and brush exist over ridge or hill tops to avoid dominance of unnatural appearing edges. Roads and landings would conform to folds and ridge lines in the landscape to avoid dominance. Harvest boundaries would normally utilize all breaks in topography to avoid excessive unit size.

4. The most difficult situation is where proposed deviations are in direct opposition to the dominance elements of valued landscape character being viewed. Examples include a horizontal road (line) in an otherwise vertical landscape above tree line or…a metal lattice work utility tower in the middle of a highly valued historic village. The first approach should be to relocate such deviations so they are not evident or can be subdued to be visually subordinate. Utility structures are often geometric, forceful, and large. In addition to careful location they can often be designed in simpler form to blend better with the setting or be more compatible with architectural styles of a cultural landscape.

These approaches were used when determining resulting Scenic Integrity and SIO achievement on the ANF for this Project. Mitigation measures that utilize these approaches would help reduce the visibility of the transmission line, reduce deviation from the existing Landscape Character, and reduce the dominance of the Proposed Action or Alternatives. See the Visual Resources Technical Report regarding the methodology used to determine effects on Desired Landscape Condition, application of viewing variables and mitigation measures to Project impacts, and resulting Scenic Integrity.

Viewpoints of High Concern

Viewpoints of high concern were identified from existing data for the ANF based on their potential to be affected and visual resource impacts to landscape units on the ANF. A final list of viewpoints of high concern was identified during a field trip on April 27 and 28, 2010. Additional photography of the viewpoints of high concern was collected during a field trip on November 12, 2010. Photographs were taken from these viewpoints of high concern to capture existing conditions. Descriptions of the existing conditions of the landscape and viewing circumstances for each viewpoint were produced, and simulations were prepared. The simulations were used to support the analysis and illustrate the expected impacts to the agencies and the public. Refer to the Visual Resources Technical Report in Volume III for descriptions of the viewpoints of high concern (Appendix A), for photo simulations of the Proposed Action and Alternatives (Appendix C), and affects on Desired Landscape Character. Photo simulations are also included in Appendix L of this Final EIS/EIR. New access roads have not been engineered, and were not modeled in the simulations. In some cases, the lack of new or improved access roads as depicted in the simulations may not capture some landform and vegetation contrasts, and therefore underestimate the visual impacts created as a result of the Project.

The process of photo-simulation began with taking field photographs, documenting the locations of the viewpoint of high concern and the weather conditions, and then matching those photographs with Project terrain models developed using Microstation. Computer models of the transmission line and switching station were introduced into the terrain model based on preliminary facility layouts developed in GIS. The final image is a composite of the 3-dimentional structure modeling and the original photograph. The process ensured that spatial relationships, perspective, proportions and similar visual attributes were accurate and matched existing landscape conditions.

The proposed structure types used in the simulations were modeled in CADD based on engineering input from LADWP. Final engineering on the transmission line had not been completed during the environmental analysis phase of the Project, and actual structure locations and configurations could deviate from the simulation if the Project is approved and constructed. New access roads have not been depicted in the simulations, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

Public Lands Managed by the BLM

All public lands managed by the BLM within the study corridor have been identified as VRM Class III or undefined where no VRM designations had previously been determined. All levels of visual contrast (strong, moderate, and weak) would be compatible with the BLM VRM Class III designation.

CEQA Significance

To satisfy CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria have been identified and utilized to make these significance conclusions. Impacts of the Proposed Action or Alternatives would be considered significant and would require mitigation if they would:

- Criterion VR1: Have a substantial adverse effect on a scenic vista.
- Criterion VR2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Criterion VR3: Substantially degrade the existing visual character or quality of the site and its surroundings.
- Criterion VR4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Significance conclusions for individual impacts are not identified for NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for compliance with CEQA.

Mitigation Planning

Mitigation measures were developed to address and, as feasible, reduce the visual impacts caused by construction and operation of the Project. Mitigation measures can be applied individually to impacts or can be combined to reduce or eliminate impacts. The impacts remaining after applying mitigation measures are termed residual impacts. Mitigation measures are not finalized or committed to by LADWP until further discussions with the USFS and BLM are conducted.

Minimization measures would be implemented on a Project-wide basis or in specific geographical areas. LADWP's General Practices (GPs), preliminary measures that are implemented as part of the Project description, were considered to reduce potential visual impacts. Refer to Chapter 2 of this Final EIS/EIR for a full list of GPs.

Effective mitigation measures are those that reduce the visibility or weaken the contrast of the Project. Further, in assessing the impact of the proposed activity, it was determined that all Alternatives would have at least a "low" impact since there would always be some level of identifiable impact to viewers as long as the transmission line is visible (and to the SIOs on the ANF). One or more of the relevant mitigation measures were recommended for impacts where they were determined to be effective.

Applying specific mitigation is not expected to reduce initial impacts a full impact level because of the dominance of the structures; thus, residual impacts are the same level as initial impacts in the immediate foreground and foreground. However, mitigation is still effective in minimizing impacts to the extent practicable, will reduce impacts in the middleground and background, and may help the Project reach or approach the established SIO. The application of mitigation measures when the Project is viewed in the middleground and background distance zones will be most effective in preserving Scenic Integrity levels. In these distance zones, the resulting Scenic Integrity level was adjusted accordingly, typically one level. After viewing conditions were evaluated and Scenic Integrity results determined, selective mitigation measures were also considered, and Scenic Integrity levels adjusted upward as appropriate.

Environmental protection measures were considered when assessing initial impacts. After initial impacts were determined, specific mitigation measures were applied as appropriate to reduce visual impacts of the Project. Refer to the Visual Resources Technical Report for a summary of locations for each specific mitigation measure by milepost and to the Visual Resources Technical Report Appendix E for a complete list of initial impacts, mitigation measures, and residual impacts by milepost.

TABLE 4.2.9-2. MITIGATION MEASURES—VISUAL RESOURCES

Number	Description
VIS-1	**Crossing Linear Features** - To reduce visual impacts at crossings of linear features identified as highly sensitive in the visual resources inventory, towers shall be placed at the maximum feasible distance from the crossing within limits of standard tower design. On ANF lands, to the extent practical, LADWP shall design and space all new transmission line structures at road crossings and trail crossings so that conductors are approximately mid-span at the road or trail. Structures should be set as far back from the crossing as possible. When feasible, crossings should be made at right angles and the site chosen for the crossing should be the one that will result in the least disturbance or alteration of the natural landscape.

Number	Description
VIS-2	**Feathered Vegetation Clearing** - Where vegetative clearing is necessary, to the greatest extent possible, clearing edges shall be tapered and feathered to reduce the visual impact.
VIS-3	**Existing Access Road Widening or Upgrades** - To the greatest extent possible, LADWP shall use existing and already maintained access roads and spur roads to perform project construction. Where erosion potential has been identified as severe or very severe in the visual contrast analysis, no widening or upgrading of existing access roads shall be undertaken in the area of construction and operation, except for repairs necessary to make roads passable and where the USFS has approved plans submitted by LADWP before construction.
VIS-4	**Pacific Crest National Scenic Trail** - Where the proposed transmission line route crosses the Pacific Crest National Scenic Trail, the transmission towers shall be engineered to be placed as far away from the Foreground viewshed (0.5 mile) of the Trail as feasibly possible within engineering constraints, and a minimum of 300 feet from the PCT if possible.
VIS-5	**Clean Up Construction Related Areas** - LADWP shall keep construction-related operations areas clean and tidy by storing building materials and equipment within the proposed construction staging areas and/or generally away from public view when feasible. LADWP shall remove construction debris, including temporary fencing when no longer needed, promptly and at regular intervals. For ANF lands, in areas where cleared vegetation would be visible from sensitive viewing locations, LADWP shall dispose of cleared vegetation and woody material off-site (not necessarily off-ANF land), or chip and store for restoration work, as approved by the USFS, in a manner that is not visually evident and does not create visual contrasts.
VIS-6	**Construction Site Clean Up and Restoration** - When the construction period is over, construction sites shall be cleaned up and their surfaces shall be restored as closely as possible to pre-construction conditions.
VIS-7	**Fence Screening** - All temporary chain-link fencing installed during the construction process shall be covered with screening fabric or slats and shall be maintained in good working condition until the fence is removed. This process will help provide screening from construction activities, equipment and materials. The fabric/slat colors shall be selected based on what best blends in to the immediate surroundings of where they are being used.
VIS-8	**Reduce Glare and Light Spill** - Where applicable, the lighting specified during the implementation of this Project shall be the minimum required to meet safety and security standards. All light fixtures shall be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the fixtures shall have sensors or switches to permit the lighting to be turned off at times when not required.
VIS-9	**Darkened Structure Treatment** – LADWP shall implement darkened steel lattice structure treatment for selected locations within the ANF for the new 230kV transmission line. For each Alternative, treatment options and selected locations for the new 230 kV transmission line are as follows: • Alternative 1: dark grey, mileposts 58.2 – 73.8 • Alternative 2: dark grey, mileposts 51.7 - 52.6, 54.9 – 58.5 • Alternative 2a: in addition all the Alternative 2 treatment options and locations: medium grey, mileposts 0.0 - 6.6 • Alternative 3: none
VIS-10	**Landscape Screening** - To the extent practical, LADWP shall locate new transmission line structures in areas where they are screened by natural landscape features (e.g., behind a hill) so that they are seldom seen by ANF visitors or the general public. Natural topography lines should be followed to soften the visual impact of structures and of disturbances of soils and vegetation. Avoid placing lines in the center of valleys or draws where they would be even more prominent. To the extent feasible, the final locations of transmission structures shall be adjusted to avoid locations that place the structures in the middle of the line of sight from roads, trails and other important views. New routes should follow vegetative edges whenever possible for added screening and to soften the visual impact of the transmission line.
VIS-11	**Avoid Skylining of Towers** - To the extent practical, LADWP shall design and locate new transmission lines so that they do not break the skyline or are directly on the skyline when viewed from sensitive viewpoints. LADWP shall consult with the USFS to ensure that the objectives of this measure are achieved.
VIS-12	**Minimize Vegetation Clearing** - To the extent practical, LADWP shall keep modifications of the natural settings to what is minimally required for safe, efficient construction, operation, and maintenance of the Project. Areas that are cleared/opened solely for safe access during the construction stage and that exceed the need for permanent future access into the site shall be restored to the greatest extent possible.
VIS-13	**Avoid Locating New Roads in Bedrock** - Where feasible, re-opened and/or new access road and spur road locations on ANF land shall be designed to avoid bedrock cuts, and all road cuts shall be in soil material to protect landscape character, ensure revegetation opportunities, and promote visual quality.

Number	Description
VIS-14	**Excavated Materials Disposal** - For ANF lands, LADWP shall dispose of excavated materials (excess soil and rocks, etc.) in disposal areas (either on ANF lands or off ANF lands) as designated by the USFS. Where applicable, any tower footings designated for removal (concrete, reinforcing steel, angle steel, anchor bolts, etc.) shall be disposed off ANF lands.
VIS-15	**Construction Area Site Selection** - To the extent feasible, the sites selected for use as construction yards, pull sites, helicopter landing zones, laydown areas, etc., shall be areas that are already flat, disturbed, and/or clear of vegetation, which would require the least amount of modification, clearing, and soil disturbance. To the extent feasible, these construction features shall be in areas of low visual sensitivity.
VIS-16	**Compensation for Impacts to Landscape Character and Visual Quality** – All reasonable efforts shall be made to meet the Scenic Integrity Objectives (SIOs) shown on the SIO Map in the ANF Land Management Plan. Minor adjustments that exceed a drop of more than one SIO level are allowable, with the Forest Supervisor's approval, for necessary projects that meet a greater public need and cannot be reasonably accommodated on non-NFS land. In areas where the SIOs cannot be met, LADWP and the Forest Supervisor shall reach a consensus on what is a commensurate amount of Visual/Scenery Management related restoration or compensation to the ANF to make up for the Project's long-term visual impacts to the landscape character and visual quality, including but not limited to impacts to landscape character and visual quality of scenic highway and scenic trail viewsheds.
VIS-17	**Span Matching of Existing Structures** – To the extent practicable and within the limits of standard structure design, LADWP shall match existing structure spacing, spans and heights as closely as possible to reduce visual complexity as seen from high concern viewpoints.
VIS-18	**Treat New Concrete Footings and any other permanent Project-related structures with Visually Appropriate Color or Construction Materials in Selected Areas** – Within the limits of normal construction practice and in areas on the ANF identified during final design by the ANF landscape architect and approved by the Authorized Officer, LADWP shall apply a one-time treatment or application on the exposed surfaces of all new footings and concrete structures using the vendor's standard method (a concrete additive or stain, to be determined during final design). Up to three colors may be chosen by the ANF landscape architect; however, consideration would be given to apply the colors in a reasonable approach to limit the non-contiguous use of each color. Other constructed permanent (3 years or more) features/structures including, but not limited to, retaining walls, fences, gates, drains, culverts, bridges, low water crossings, etc., on the ANF must meet the guidelines in the Built Environment Image Guide and the SMS to the extent feasible and be approved by the ANF landscape architect and the authorized officer.

Mitigation measures would be implemented on a Project-wide basis or in specific locations. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14, and VIS-15 would be implemented on a Project-wide basis. Mitigation measures VIS-1, VIS-2, VIS-3, VIS-4, VIS-9, VIS-16, VIS-17, and VIS-18 would be applied in specific locations. See the impact table and Technical Report Section 6.4 (Visual Resources Technical Report Appendix E) for locations where these mitigation measures would be implemented.

Visual Impact Results

Policy Consistency

A summary of the regulatory framework pertaining to visual resources is in Chapter 3, Section 3.2.9.

BLM

The Project is consistent with the BLM Ridgecrest Field Office California Desert Conservation Area Plan 1980 as Amended (1999) and West Mojave Plan (2006). Furthermore, the visual contrast levels would meet the BLM's VRM objectives where Alternatives would cross VRM Class III lands.

Angeles National Forest

The Project would not be consistent with the ANF Land Management Plan Standards for Alternatives crossing high SIO landscapes, and if one of the Alternatives is approved, it would require a Project-specific ANF Land Management Plan amendment.

Aesthetic Management Standards required by (36 CFR 219) included in Part 3 of the ANF Land Management Plan (2005) that are applicable to the Project include the following:

- **S9** - Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map (page 106).

- **S10** - Scenic Integrity Objectives would be met with the following exceptions (page 106):
    - Minor adjustments not to exceed a drop of one SIO level are allowable with the Forest Supervisor's approval.
    - Temporary drops in more than one SIO level may be made during and immediately following project implementation providing they do not exceed three years in duration.

Part 2, Appendix B, of the ANF Land Management Plan includes a map of the ANF SIOs. Refer also to the Visual Resources Technical Report, Appendix D, Agency Management Objectives and Compatibility Map, for mapping of the ANF SIOs that would potentially be impacted by the Project.

The Project would be compatible with the established ANF SIOs and comply with ANF S9 in the following cases:

Seldom Seen Areas - Seldom Seen (SS) Areas are defined in the glossary of the SMS Handbook as areas of the landscape that are infrequently viewed by the public. Page 4-11 defines these areas as "Landscapes not visible in the foreground, middleground, or background from any of the selected travelways or use areas are considered seldom-seen since we know they may be seen, at a minimum, from aircraft and by the occasional viewer wandering through the forest."

For the purposes of this study, SS areas include those portions of the study area not visible from any identified sensitive viewpoint. These areas were identified by overlaying the Alternatives with the visibility mapping completed for the identified viewpoints of concern.

Areas where the Project impacts would be compatible with the ANF SIO - Mitigation measures may reduce the level of dominance of Project on the landscape; may reduce the degree of deviation from the Landscape Character; and may increase the intactness or level of expression of the Landscape Character resulting from the Project.

In locations where the Project would not meet the established ANF SIO and would not meet ANF Land Management Plan Standard S9, it may meet ANF Land Management Plan Standard S10 if the following conditions are met:

- The scenic integrity level that would result from the Project is determined to be no more than one level below the established ANF SIO.
- An adjustment of one SIO is made with the Forest Supervisor's approval.

However, while smaller areas of Moderate SIOs would be crossed by the Alternative routes on the ANF, the majority of the ANF that would be crossed by the Alternatives is designated as having High SIOs, and the Project would typically result in Moderate, Low or Very Low Scenic Integrity, with small areas of Unacceptably Low Scenic Integrity after the implementation of mitigation measures. The Project would not meet the conditions set for these High and Moderate SIOs areas even if the Project is located in a designated utility corridor.

Because the ANF does not adjust SIOs to accommodate specific projects, a Project-specific ANF Land Management Plan Amendment would be required for the Project to cross High SIO areas of the ANF.

ANF Land Management Plan Standard ANF S1 - Program Strategies and Tactics related to landscape aesthetics included in Forest-specific Design Criteria, Place-specific Standards in Part 2 of the ANF Land Management Plan are applicable to the Pacific Crest National Scenic Trail. The guidance is to protect scenic integrity of foreground views as well as from designated viewpoints of high concern. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail (page 76).

Local Plans

The Project is also consistent with the Kern County General Plan (2007) and the city plans and policies for those municipalities within the study area. The Los Angeles County General Plan (1974) policy would not also be met. It is the policy of Los Angeles County in the General Plan Scenic Highway Element to "Protect and enhance esthetic resources within corridors of designated scenic highways" (Los Angeles County General Plan 1974). Areas of high and moderate impacts to county designated scenic highways may not be consistent with Policy #3 of the Scenic Highways Element. Mitigation measures VIS-1, VIS-2, VIS-3, VIS-4, VIS-6, and VIS-7 would reduce visual impacts of the Proposed Action and Alternatives from the designated scenic highways. Mitigation measure VIS-1 would locate structures as far as possible from designated scenic highways at crossing locations and would also be effective in minimizing impacts. Together these mitigation measures would protect aesthetic resources to the extent possible within the corridors of the designated highways (City of Palmdale General Plan Identified "Antelope Valley Scenic Highways," City of Los Angeles General Plan Identified Scenic Highways). Refer to the Visual Resources Technical Report in Volume III of this Final EIS/EIR for descriptions of plans and policies in effect within the study area.

Private Lands and Public Lands Managed by the BLM

High impacts to high sensitivity viewpoints on private lands and public lands managed by the BLM, including residential, recreation, preservation and transportation viewpoints, would result from immediate foreground views (0 to 500 feet) and foreground views where the Proposed Action or Alternatives would have strong contrasts. Moderate impacts to high sensitivity viewpoints (i.e., on private lands and public lands managed by the BLM) would result from foreground views of moderate or weak contrast levels or middleground views of strong contrast areas of the routing Alternatives.

Moderate impacts to scenic quality occur in areas of Class A, Class B and Class C scenery. Moderate impacts to Class A scenery would occur in areas of weak visual contrast. Moderate impacts to Class B scenery would occur in areas of strong or moderate visual contrast. Moderate impacts to Class C scenery occur only in areas of strong visual contrast (see Table 4.2.9-3). Also refer to the Visual Resources Technical Report, Appendix E for additional detail.

Overall residual impacts (to scenic attractiveness, residences, travelers and recreationists, etc.) are quantified on BLM and private lands only. On the ANF, only compliance with ANF SIOs and effects on existing setting and Desired Landscape Condition (character) were assessed as described in the Visual Resources Technical Report. Therefore, the sum of high, moderate and low impacts for Overall Residual Impacts will not total the Alternative line length.

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On the ANF, the Project would typically be non-compliant with SIO levels when viewed from viewpoints of high concern (e.g., Pacific Crest National Scenic Trail) in immediate foreground and foreground views. SIO compliance is discussed in the sections below. Scenic quality impacts were not assessed for the Alternatives on the ANF because effects on scenic attractiveness are captured with the SIO compatibility analysis.

Portions of the Alternative routes over 0.5 mile from the Pacific Crest National Scenic Trail are outside the foreground distance zone and would generally be compatible with ANF S1. However, the crossing of the Pacific Crest National Scenic Trail by Alternative routes would result in high impacts within the foreground views to 0.5 mile. Mitigation measures would be utilized as practicable to reduce the impact of the Project on the existing landscape character and on views from the Pacific Crest National Scenic Trail. Refer to the Visual Resources Technical Report, Appendix F, for a map of the Pacific Crest National Scenic Trail and the Alternative routes.

TABLE 4.2.9-3. VISUAL RESOURCE IMPACT SUMMARY

		Alternative 1	Alternative 2 - LADWP's Proposed Action	Alternative 2a	Alternative 3
Total Length of Alternative		83.1	60.7	62.5	75.5
Number of Residences within Immediate Foreground (500 feet)		29	63	32	23
Visual Contrast Level	Strong	9.4	0.1	1.6	0.8
	Moderate	52.4	13.2	18.0	2.5
	Weak	21.4	47.5	47.8	68.1

			Alternative 1	Alternative 2 - LADWP's Proposed Action	Alternative 2a	Alternative 3
USFS Resulting Scenic Integrity		Moderate	4.7	3.0	3.0	0.9
		Low	3.5	3.7	4.4	2.1
		Very Low	7.5	6.6	7.3	1.3
		Unacceptably Low	0.4	0.0	0.8	0.2
USFS SIO Non-Compliance (miles) (-1 to -4 Scenic Integrity/SIO Underachievement)			14.5	13.3	15.5	3.6
Project-Specific Plan Amendment (-2 to -4 Scenic Integrity/SIO Underachievement)			11.4	10.3	12.5	3.6
Scenic Integrity Result Subject to Forest Supervisor's Approval (-1 Scenic Integrity/SIO Underachievement)			3.1	3.0	3.0	0.9
Pacific Crest National Scenic Trail High Impact / Foreground Distance Zone within the ANF(miles)			0.0	1.5	2.8	0.8
Pacific Crest National Scenic Trail High Impact / Foreground Distance Zone outside the ANF(miles)			5.5	0.0	0.0	0.5
BLM Managed Land Without Established VRM Class			4.9	4.9	4.9	4.9
Scenic Attractiveness Impacts (private lands and public lands managed by the BLM)		Class A Moderate Impacts	1.1	0	0	0
		Class B Moderate Impacts	4.5	0	0.8	0.2
		Class C Moderate Impacts	5.9	0	0	0.5
Impacts to Sensitive Viewpoints	Residences	High	8.4	5.8	3.6	6.3
		Moderate	18.7	14.5	16	28.6
	Recreation and Preservation Viewpoints	High	7.3	0.4	0	1.8
		Moderate	8.7	0.5	0.5	4.3
	Transportation Viewpoints	High	8.3	2.1	1.2	1.5
		Moderate	7.0	2.7	2.8	7.0
Overall Residual Impacts (Non-ANF Only)		High	20.4	4.5	4.6	9.0
		Moderate	18.1	11.7	12.5	29.1

Notes: Alternatives were divided into tenth-mile increments for the purposes of calculating inventory and impact distances. Where Alternatives did not divide evenly into 0.1 mile increments, any remaining distance less than 0.1 mile was rounded up to 0.1 mile. Thus totals in inventory and impact tables may add up to more than the actual distance of the Alternatives.

Comparison of Lattice Steel Towers and Tubular Steel Poles

There are visual advantages and disadvantages of both Lattice Steel Towers (LSTs) and Tubular Steel Poles (TSPs). These differences must be understood so that mitigation can be most effective in reasonably reducing visual impacts.

TSPs are generally considered to be more aesthetically pleasing than LSTs because they seem to have a more orderly, architecturally uniform structure. They also have a much smaller base footprint, which is why more transmission companies are considering the use of this type of tower in populated/urban areas, where space is more limited. The downside to TSPs is that, because of their design, they create a more solid structure that reflects more light and creates a much more prominent tower shadow than thin-framed LST designs. This is why TSPs can generally be seen more clearly from greater distances than LSTs.

When compared to TSPs, LSTs are not as aesthetically pleasing from a foreground distance, but because of their open lattice framing, they have the basic advantage of creating a transparency that also gives less of a tower shadow effect. This allows for them to blend or fade better into the background to a point where, in the right setting, they are less noticeable to the casual observer in most middleground and background views at greater distances than TSPs. However, LSTs require a much larger footprint or ROW than TSPs do. Because of their wide footprint, however, LST towers are able to support significantly longer spans between structures, which means that fewer LST structures would be needed for the Project than if TSPs were used. TSP spans would be less than 1,000 feet, while the LSTs would typically span 1,200 to 1,500 feet, which would also allow for greater offset distances when crossing visually sensitive features.

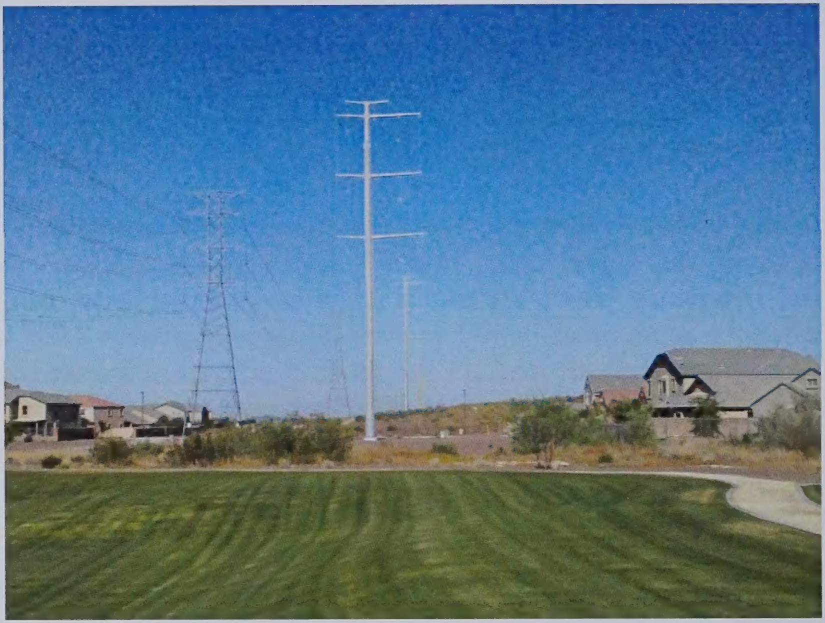
Because of their ability to blend better into background areas, LSTs are generally better in rural or forested areas where the towers blend into the landscape, especially when backdropped against hillsides and mountains, which are common landforms found in the ANF. Although the footprint of LSTs may be approximately 20 feet wide (vs. approximately 4 feet wide for a TSP), the individual structural members of the LST are much smaller, and for the most part use less steel/raw material than a TSP of the same voltage. Painting the towers is not an option due to maintenance and environmental concerns raised by the ANF. The ANF is requiring different tones or shades of steel in order to better enable the towers to blend into different natural backdrops (Mitigation Measure VIS-1).

This treatment is extensive and has been consistently successful because the smaller components of the LSTs are easier to manage during the process, and has been applied successfully on transmission projects throughout the United States for decades. The process requires dipping the steel members in a chemical bath, which, when exposed, gradually turns the galvanized steel dark. Dulling the steel of LST structures that would primarily have a vegetated mountainous backdrop is a good mitigation measure to reduce the reflectivity effects and reduce the visibility in foreground, middleground, and background views. This steel treatment option is not available for TSPs.

Because of the information provided and the conditions given, the EPA's submitted comment on "the use of TSPs in natural settings near areas frequented by recreational users, such as in proximity to the Pacific Crest Trail" would actually increase visual impacts within the ANF. There is also mitigation (VIS-1) currently in place requiring that, when spans cross the PCT, towers shall be placed at the maximum feasible distance from the crossing within limits of standard tower design. On ANF lands, to the extent practical, LADWP shall design and space all new transmission line structures at road crossings and trail crossings so that conductors are approximately mid-span at the road or trail. Structures should be set as far back from the crossing as possible. When feasible, crossings should be made at right angles and the site chosen for the crossing should be the one that will result in the least disturbance or alteration of the natural landscape. This mitigation measure is better supported by using LSTs instead of TSPs, due their capacity to support longer spans.

TSPs do have a place in some settings (e.g., urban). TSPs do have a more aesthetically pleasing design that Green Valley residents may prefer, since the Project would have a high impact to residential views there. It would also reduce a need for a larger ROW. The problem, however, lies in that Alternative 2 would be located in a corridor with two other existing transmission lines on LSTs. The visual contrast of choosing TSPs over LSTs for the Green Valley segment of the Project (see Alternative 2 and Alternative 2a) would create a visual impact, as TSPs would not match the existing structures in corridors paralleled (see Figure 4.2.9-1).

FIGURE 4.2.9-1. **COMBINED TSP AND LST IN SAME CORRIDOR**



There would also be an issue of identifying where to begin and end the TSP span so that it breaks off cleanly into the LST segments on the ANF. This, however, could set a standard for Green Valley, and when future utility projects/upgrades are implemented within the Green Valley ROW, they could also be required to use TSPs and a new uniformity can be established. Therefore, it would be a trade-off that would require community input. The feasibility of using TSPs must also be determined during final engineering when considering environmental, structural, and implementation constraints. TSPs cannot be used in areas of heavy ice loading (areas of elevation over 3,000 feet above mean sea level [AMSL]), and much of the Project area is over 3,000 feet AMSL. Only a small portion of the Project elevation around Green Valley is below 3,000 feet AMSL, and only a few structures would be located under the 3,000-foot threshold (foundation elevation). Unlike with LSTs, the placement of TSPs by helicopter is not possible, but in Green Valley the use of cranes could be manageable.

No Action Alternative

The No Action Alternative would result in no adverse affects to visual resources in the Project area since neither the Proposed Action nor the Alternatives would be constructed, operated, and maintained.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit
As opposed to the reconductoring component of the Alternative 2, the addition of the 230 kV circuit within the existing ROW would include only stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant. The activities involved in the addition of a future 230 kV circuit within the existing ROW would consist of adding a second circuit to the existing 230 kV alignment. Although potential temporary or short term visual impacts could result from activities during construction, no residual high or moderate impacts to visual resources are expected to occur due to the addition of the new 230 kV circuit. Overall contrast levels resulting from the new 230 kV circuit are expected to be weak, resulting in low visual impacts.

Reconductoring of BR-RIN Transmission Line
Reconductoring of the existing BR-RIN would require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). The existing transmission line would be removed and used to pull the new conductor. Some of the transmission line structures would need to be modified or replaced, and/or foundations reinforced, to carry the additional weight of the new heavier conductor. All work would primarily remain within the existing ROW.

Although potential temporary or short term visual impacts could result from activities during construction, no residual high or moderate impacts to visual resources are expected to occur due to reconductoring.

Where the existing towers would be replaced in some areas (Towers 186-1 to 190-3 and 219-4 to 225-1), they would be replaced with similar towers in the same location after construction of the new double-circuit 230 kV towers. Thus structure contrast would be weak and additional ground disturbance would be minimal, resulting in low visual impacts. In some areas where less work is anticipated for the reconductoring (Towers 175-5 to 185-4, 190-4 to 219-3, and 225-2 to 234-1), the visual impact would be low due to minimal visual change from the reconductoring and minor modification to towers.

Visual impacts would be low for the existing 4-circuit structures (Tower 234-2 to 251-1). Tower 234-2 would be replaced by a similar tower in height and footprint. Thus weak structure contrast and low additional ground disturbance are expected, resulting in low visual impacts. Towers 234-3 to 251-1 would require only minor modifications, also resulting in low visual impacts.

New Haskell Canyon Switching Station
Contrast levels for the proposed Haskell Canyon switching station would be weak due to multiple existing transmission lines that traverse the area surrounding the proposed site and expected low ground disturbance levels in an area of scrub vegetation. Low impacts to Class B scenic attractiveness would be expected.

Low impacts are expected to residences with middleground views southwest of the proposed switching station site. Moderate impacts to the Veluzat Motion Picture Ranch would occur due to unobstructed foreground views; however existing transmission infrastructure traverses the area, minimizing potential visual impacts.

Expansion of Barren Ridge Switching Station
Due to the adjacent presence of the existing Barren Ridge Switching Station, contrast levels would be weak. Although potential temporary or short term visual impacts would result from construction activities, no residual high or moderate impacts to visual resources would occur due to the expansion of the switching station.

Marker Ball Installation
As a result of Federal Aviation Administration (FAA) consultation, there is potential for the installation of ground wire safety marker (aviation) balls on wires in areas where they are over 200 feet above ground level, typically at canyon crossings. The location of these areas will not be known until detailed design is completed for the Project, at which time the FAA would be consulted to ensure marking standards and requirements are implemented for the Project (see *Conductor Installation* under Section 2.4.2).

The presence of the 36-inch diameter marker balls on the ground wires would draw attention to the transmission line conductor wires, causing additional visual impacts. The marker balls would likely be an alternating solid orange, white, or yellow color, which provides the greatest visibility against all backgrounds. These colors would also highly contrast against the sky and landscape backdrop. The degree of marker ball impacts would depend on the proximity of the marked line in relation to high-concern or sensitive viewpoints. Many of the roads and trails within the ANF and elsewhere in the Project area follow canyons and drainages and, therefore, sensitive viewpoints would probably be crossed in these areas. In these canyon areas, the structures would be typically located in an elevated (superior) viewing condition, and sometimes would not be visible or in the viewing orientation of the sensitive viewer, while the conductor lines may be. While transmission line conductor wires may be noticeable, but not dominant, within the viewshed of sensitive viewpoints if the wires are not marked, installation of the 36-inch diameter balls would substantially increase the potential visual impacts of the Project and the dominance of the wire alignment. In addition, the installation of the balls would negate or reduce the effectiveness of General Practices or mitigation measures implemented to minimize the visual impacts of the transmission line and structures (such as the use of non-specular conductors, structure darkening, and placing structures at maximum distance from roads and trails when spanning). On the ANF, the presence of the marker balls would further reduce the resulting Scenic Integrity of the landscape and potential compliance with ANF SIO, depending on the distance from High Concern viewpoints and dominance/contrast of the marker balls in the viewshed (see Visual Resources Technical Report, Tables 15 and 16).

Photo-Simulations

One viewpoint for a photo-simulation of the Haskell Canyon Switching Station was identified. The viewpoint is briefly described below. Refer to Appendix L of this Final EIS/EIR for photo-simulations and detailed descriptions of the ANF viewpoints of high concern.

- Photo-Simulation 11 – View of the Haskell Canyon Switching Station site. View is looking southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 at a Forest Service gate one mile north of Pettinger Canyon Road. New access roads have not been depicted in this simulation, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

As the Alternative with the longest of the 230 kV double circuit transmission lines (83.1 miles), the Alternative 1 transmission line would generally cross landscapes and result in visual impacts for a greater distance than the transmission line for other Alternatives, and would have 20.4 miles of overall high visual impacts (on non-ANF lands). Although contrast levels along the Alternative 1 transmission line would generally be moderate or low because of the paralleling existing transmission lines, the Alternative 1 transmission line would have strong contrast for 9.4 miles.

The Alternative 1 transmission line would have the longest distance of moderate impacts to Class A scenery (1.1 miles). On private lands and public lands managed by the BLM, impacts to scenic attractiveness would be generally low, with moderate impacts occurring in all Class A areas and some Class B and Class C areas with strong to moderate visual contrast levels. Mitigation Measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, and VIS-15 would be generally implemented for the Project to reduce scenic attractiveness impacts. In specific locations (see Visual Resources Technical Report Appendix E), VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT would be implemented to reduce scenic attractiveness impacts. Refer to the Visual Resources Technical Report Appendix F, Contrast, Scenic Attractiveness Impacts, and Resulting Scenic Integrity Map.

Impacts to residences and other sensitive viewers would generally range from predominantly low to areas of high and moderate impacts. The Alternative 1 transmission line would have 29 residences within the immediate foreground and a total of 8.4 miles of high impacts and 18.7 miles of moderate impacts to residences. Notable clusters of residences occur in the immediate foreground and foreground distance zones in the area where the California Aqueduct and the Los Angeles Aqueduct would also cross, resulting in high and moderate impacts. Mitigation

Measures VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 would generally be used to minimize impacts on residences for this Alternative. In specific areas, VIS-2, VIS-3, VIS-9, and VIS-18 would be used in specific locations to reduce contrasts created as a result of the Project in areas of high residential visibility (see Visual Resources Technical Report Appendix E). Refer to the Visual Resources Technical Report Appendix F, Residential Viewpoints Inventory and Impacts map.

The Alternative 1 transmission line would cross the second greatest distance of ANF managed lands (16.1 miles) and would have the second greatest distance of non-compliance with SIOs. A Project-specific plan amendment would be required as a result of 11.4 mile of this, and 3.1 miles would be subject to the Forest Supervisor's approval. Within the ANF, the Alternative 1 transmission line would cross the I-5 Corridor Place and the Santa Clara Canyons Place. The Alternative 1 transmission line would have the following impacts on the desired condition of the landscape places:

I-5 Corridor Place
The Alternative 1 transmission line would alter dramatic natural appearing canyon and rugged mountain views of the I-5 Corridor Place. It would have minimal impact on the presence of coast live oaks along shaded slopes and canyons, as this vegetation type would be avoided by the Alternative1 transmission line. It would have a moderate impact on preservation of a well-defined age class mosaic in chaparral due to clearing of chaparral to widen existing access roads, for spur roads, and for structures and construction activities that would create deviations from the desired landscape character.

Santa Clara Canyons Place
The Alternative 1 transmission line would create deviations in the character of the dramatic canyon panoramas and rugged mountain background views of the Santa Clara Canyons Place. It would have minimal impact on oak woodlands, as this vegetation type would be avoided by the Alternative 1 transmission line. It would have a minimal impact on the pastoral qualities of grazing activities. It would have a moderate impact on preservation of a well-defined age class mosaic in chaparral due to clearing of chaparral to widen existing access roads, for spur roads, and for structures and construction activities.

Alternative 1 would typically result in Very Low or Low Scenic Integrity; therefore, High SIO would typically drop two to three levels and a Moderate Scenic Integrity would drop one to two levels, except in the seldom seen distance zones. The Project would result in Low Scenic Integrity for 3.5 miles and Very Low Scenic Integrity for 7.5 miles. Unacceptably Low Scenic Integrity levels would be created along 0.4 mile of Alternative 1, and Moderate Scenic Integrity along 4.7 miles. Alternative 1 would cross the second greatest distance of ANF-managed lands and would have the second greatest distance of plan amendment SIO non-compliance, representing 70.8% (11.4 miles) of the total 16.1-mile line length on the ANF. SIO non-compliance subject to the Forest Supervisor's approval (-1 SIO underachievement) would total 1.6 miles for this Alternative. This Alternative would be located entirely within a designated utility corridor on the ANF.

The Alternative 1 transmission line would also have the longest distance of moderate impacts to recreation and preservation viewpoints and transportation viewpoints. The Alternative 1 transmission line would have 7.3 miles of high visual impacts to recreation and preservation viewpoints and 8.7 miles of moderate impacts. The Alternative 1 transmission line would parallel the Pacific Crest National Scenic Trail in the immediate foreground distance zone for 5.5 miles in this area. Due to the close proximity, the Alternative 1 transmission line would dominate views from the trail, resulting in significant impacts. Alternative 1 transmission line would also cross the Pacific Crest National Scenic Trail, resulting in significant impacts to potential viewers and to the High SIO along the trail. Middleground views from the USFS Templin Vista would result in moderate impacts to potential viewers and to the High SIO in the area that the project crosses. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the project would reduce contrasts and impacts on recreation and preservation viewpoints. In specific areas where the Project would cross linear features, such as the Pacific Crest National Scenic Trail, VIS-1 would slightly reduce the dominance and contrast created as a result of the Project. Other specifically applied mitigation measures, including VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map.

The Alternative 1 transmission line would have 8.3 miles of high visual impacts to sensitive transportation viewpoints and 7.0 miles of moderate impacts. It would cross the Ridge Route Road, a First Priority County Scenic Highway, several times, resulting in significant impacts. The Alternative 1 transmission line would also cross Lancaster Road, a Second Priority County Scenic Highway, and San Francisquito Canyon Road, identified by the ANF as a viewpoint of high concern. Views from both roads would result in significant impacts to potential viewers. Views from Lake Hughes Road, Old Ridge Route, and I-5, all Second Priority County Scenic Highways, and State Highway 14, an Eligible State Scenic Highway, would result in significant impacts to potential viewers. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on travel viewpoints. Other specifically applied mitigation measures, including VIS-1, VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Park, Recreation and Travel Viewpoints Inventory and Impacts map.

CEQA Significance

Criterion VR1 - Have a substantial adverse effect on a scenic vista. Impacts to views from the USFS Templin Vista, the only scenic vista point with views of Alternative 1, including the new 230 kV transmission line and Project components common to all action Alternatives, would be less than significant. The new 230 kV circuit, common to all action Alternatives, would also be visible from the USFS Templin Vista. Impacts to the vista point would be less than significant.

Criterion VR2 - Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. No state scenic highways would have views of Alternative 1.

Criterion VR3 - Substantially degrade the existing visual character or quality of the site and its surroundings. Moderate impacts to Class A Scenic Attractiveness would be considered significant and unavoidable impacts. For the Alternative 1 transmission line. moderate impacts to Class B and Class C Scenic Attractiveness would be considered less than significant impacts. For the Project components common to all action Alternatives, impacts would be low to moderate on Class B and C scenery, resulting in less than significant impacts. Although implementation of mitigation measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, VIS-15, VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT applies to this impact, it would not reduce this effect to a level of less than significant. No other mitigation measures have been identified that would reduce this impact to a level of less than significant.

Criterion VR4 - Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The 230 kV transmission line component of Alternative 1 and components common to all action Alternatives would not create a source of substantial light or glare. Impacts due to glare from the Project components would be less than significant, and mitigation measure VIS-8 would be implemented Project-wide to minimize the effects of construction light and glare.

Photo-Simulations

A total of seven viewpoints for photo-simulations of the Alternative 1 transmission line were identified. The viewpoints are briefly described below. Refer to Appendix L of this Final EIS/EIR for photo-simulations and detailed descriptions of the ANF viewpoints of high concern. New access roads have not been depicted in these simulations, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

- Photo-Simulation 1 – View from the off-ramp of Highway 58 to the northeast toward the Alternative 1 transmission line alignment.
- Photo-Simulation 11 – View of the Haskell Canyon Switching Station site. View is looking southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 at a Forest Service gate one mile north of Pettinger Canyon Road.
- Photo-Simulation 12 – View from a dock on the eastern shore of Castaic Lagoon north toward the Alternative 1 transmission line alignment.
- Photo-Simulation 13 – View from the Pacific Crest National Scenic Trail at the California Aqueduct and 270th Street to the north toward the Alternative 1 transmission line alignment. The simulation illustrates the dominance of the transmission structures in the immediate foreground views.
- Photo-Simulation 14 – View from Highway 138 (Lancaster Road) at 290th Street east where the Alternative 1 transmission line alignment would parallel the highway.
- Photo-Simulation ANF Viewpoint of High Concern 1– ANF Viewpoint of High Concern 1 is on the road to the trailhead at Oak Flat Campground. The view captured is a panorama to the northeast toward I-5 and the Alternative 1 transmission line alignment.
- Photo-Simulation ANF Viewpoint of High Concern 2 – ANF Viewpoint of High Concern 2 is on the Old Ridge Route. The view captured is a panorama to the northwest toward the Alternative 1 transmission line alignment.

Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

The Alternative 2 transmission line would have 4.5 miles of overall residual high impacts and 11.7 miles of moderate impacts. The Alternative 2 transmission line would have weak contrast levels for 47.5 miles and strong contrast for 0.1 mile because it would parallel an existing transmission line corridor for its entire distance in a designated utility corridor.

Visual impacts for the 230 kV triple-circuit sections and the 230 kV double-circuit sections of the Alternative 2 transmission line would generally be similar. The 230 kV triple-circuit structures would generally be taller than the double-circuit structures and would have a shorter average span, resulting in more structures per mile. However, the triple-circuit line would replace the existing BR-RIN line, resulting in a single line with taller, more frequent structures rather than two parallel 230 kV lines with similar structure types and spans. The contrast created by a single 230 kV triple-circuit line would be similar to or less than the contrast created by a new 230 kV line paralleling an existing 230 kV line. Expected ground disturbance would be somewhat less because the existing ROW would be utilized, with no additional ROW acquisition expected.

For private lands and public lands managed by the BLM, the Alternative 2 transmission line would have the second longest distance of moderate impacts to Class A scenic attractiveness and the shortest distance of moderate impacts to Class B scenic attractiveness. Potential impacts to scenic attractiveness on private lands and public lands managed by the BLM would be generally low, with moderate impacts occurring in all Class A areas and some Class B areas with strong to moderate visual contrast levels. Mitigation Measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, and VIS-15 would be generally implemented for the Project to reduce scenic attractiveness impacts. In specific locations (see Visual Resources Technical Report Appendix E), VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT would be implemented to reduce scenic attractiveness impacts. Refer to the Visual Resources Technical Report Appendix F, Contrast, Scenic Attractiveness Impacts, and Resulting Scenic Integrity Map.

Impacts to residences would generally range from predominantly low to areas of high and moderate impacts. The Alternative 2 transmission line would have 63 residences within 500 feet, 5.8 miles of high visual impacts and 14.5 miles of moderate impacts to residences. A notable cluster of residences in the foreground distance zones occurs in the vicinity of the unincorporated communities of Elizabeth Lake and Green Valley, resulting in areas of high and moderate impacts throughout. Mitigation Measures VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 would generally be used to minimize impacts on residences for the Alternative 2 transmission line. In specific areas, VIS-2, VIS-3, VIS-9, and VIS-18 would be used in specific locations to reduce contrasts created as a result of the Project in areas of high residential visibility (see Visual Resources Technical Report Appendix E). Refer to the Visual Resources Technical Report Appendix F, Residential Viewpoints Inventory and Impacts map.

The Alternative 2 transmission line would cross the second shortest distance of ANF-managed lands (13.3 miles) and would have the third greatest distance of non-compliance with SIOs of the four action Alternatives. A Project-specific plan amendment would be required as a result of 10.3 miles (77.4% of the Forest crossing) of this, and an additional 3.0 miles are subject to the Forest Supervisor's approval (-1 underachievement). The Alternative 2 transmission line would occur within an existing designated utility corridor. Within the ANF, the Alternative 2 transmission line would cross the Liebre-Sawmill Place and the Santa Clara Canyons Place. The Alternative 2 transmission line would have the following impacts on the desired condition of the landscape places:

> Liebre-Sawmill Place
> The Alternative 2 transmission line would have an impact on dramatic desert panoramas and rugged fault-zone background views. It would have minimal impact on the marked transition of plant communities from desert to mixed sage, black oak, pine and juniper at higher elevations and to visitor access to free-flowing water in drainages. The Alternative 2 transmission line would alter the undeveloped appearance of the landscape and would increase the visible human influence on the natural setting.
>
> Santa Clara Canyons Place
> The Alternative 2 transmission line would have an impact on dramatic canyon panoramas and rugged mountain background views of the Santa Clara Canyons Place. Oak woodlands found in this area, however, would not be impacted due to the Alternative 2 transmission line avoiding this important vegetation community. The pastoral qualities of this landscape would be slightly impacted by the Alternative 2 transmission line. It would have a moderate impact from clearing chaparral in a well-defined age class mosaic where preservation is desired to widen existing access roads, for spur roads, and for structures and other construction activities.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic Integrity levels resulting from Alternative 2 would generally be Low to Very Low, and would not meet the designated High SIOs or Moderate SIOs. The Project would result in Moderate Scenic Integrity levels along 3.0 miles of the Alternative in High SIO, Low Scenic Integrity for 3.7 miles and Very Low Scenic Integrity for 6.6 miles. Contrasts would be moderate to strong and the High and Moderate SIOs would not be achieved because the future desired character in these areas is to have the valued landscape character appear intact, with deviations repeating the form, line, color, texture and pattern common to the landscape character. The SIOs would not be met along 13.3 miles of this Alternative. A plan amendment would be necessary for 10.3 miles of the Alternative on ANF lands because of the resulting drop in SIO levels (from High or Moderate SIO to Low or Very Low SIO), and 3.0 miles would be subject to the Forest Supervisor's approval. This Alternative would be located entirely within a designated utility corridor on the ANF.

The Alternative 2 transmission line would have 0.4 mile of high visual impacts to recreation and preservation viewpoints and 0.5 mile of moderate impacts. The Alternative 2 transmission line would cross the Pacific Crest National Scenic Trail, resulting in significant impacts to potential viewers using the trail and to the High SIO in the area of the trail. The ANF Green Valley Camp Site would have immediate foreground views of the Alternative 2 transmission line, resulting in high impacts for potential viewers and to the High SIO landscape in the area. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on recreation and preservation viewpoints. In specific areas where the Project would cross linear features, such as the Pacific Crest National Scenic Trail, VIS-1 would slightly reduce the dominance and contrast created as a result of the Project. Other specifically applied mitigation measures, including VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map.

The Alternative 2 transmission line would have 2.1 miles of high visual impacts to sensitive transportation routes and 2.7 miles of moderate impacts. The Alternative 2 transmission line would cross Elizabeth Lake Road, a First Priority County Scenic Highway and a Palmdale Scenic Highway; San Francisquito Canyon Road, identified by the ANF as a viewpoint of high concern; and Fairmont-Neenach Road and Johnson Road, both Second Priority County Scenic Highways, resulting in significant impacts. Views from State Highway 14, an Eligible State Scenic Highway; and Lancaster Road, Munz Ranch Road, and 120th Street West, all Second Priority County Scenic Highways, would result in significant impacts to potential viewers. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on travel viewpoints. Other specifically applied mitigation measures, including VIS-1, VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Park, Recreation, Preservation, and Transportation Sensitive Viewpoints Inventory and Impacts map.

Temporary Transmission Line

The temporary transmission line needed during the construction of multi-circuit towers would cross the Pacific Crest National Scenic Trail, resulting in temporary significant visual impacts. Mitigation measure VIS-1 would be implemented to reduce impacts on Pacific Crest National Scenic Trail viewers. The foreground views from the trail and the High SIO in the area would be impacted, and the temporary transmission line would not meet the ANF Land Management Plan Standard ANF S1, although the impact would be temporary.

Tree trimming/removal areas would be parallel to San Francisquito Canyon Road and generally short in length. The trimming and removal would result in an incremental change to the visual setting. While the tree trimming and removal would alter the visual setting for viewers from the roadway and to the High SIO of the area, the limited nature of the clearing and the location along the roadway, which is already a linear clearing in the canyon, would result in moderate impacts.

CEQA Significance

Criterion VR1 - Have a substantial adverse effect on a scenic vista. No designated scenic vista points would have views of Alternative 2, including the new 230 kV transmission line and components common to all action Alternatives.

Criterion VR2 - Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. No state scenic highways would have views of Alternative 2, including the new 230 kV transmission line and components common to all action Alternatives.

Criterion VR3 - Substantially degrade the existing visual character or quality of the site and its surroundings. Moderate impacts to Class A Scenic Attractiveness would be considered significant and unavoidable impacts for the new 230 kV transmission line component of the Project. Moderate impacts to Class B and Class C Scenic Attractiveness would be considered less than significant impacts. For the Project components common to all action Alternatives, impacts would be low to moderate on Class B and C scenery, resulting in less than significant impacts. Although implementation of mitigation measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, VIS-15, VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT applies to this impact, it would not reduce this effect to a level of less than significant. No other mitigation measures have been identified that would reduce this impact to a level of less than significant.

Criterion VR4 - Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The 230 kV transmission line component of Alternative 2 and components common to all action Alternatives would not create a source of substantial light or glare. Impacts due to glare from the Project components would be less than significant, and mitigation measure VIS-8 would be implemented Project-wide to minimize the effects of construction light and glare.

Photo-Simulations

A total of eight viewpoints for photo-simulations for Alternative 2 were identified. The viewpoints are briefly described below. Refer to Appendix L of this Final EIS/EIR for photo-simulations and detailed descriptions of the ANF viewpoints of high concern. New access roads have not been depicted in these simulations, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

- Photo-Simulation 1 – View from the off-ramp of Highway 58 to the northeast toward the Alternative 2 transmission line alignment.
- Photo-Simulation 4 – View from Littlehorn Drive, off Leadhill Drive to the southwest toward the Alternative 2 transmission line alignment.
- Photo-Simulation 5 – View from the Pacific Crest National Scenic Trail to the southwest across San Francisquito Road toward the Alternative 2 transmission line alignment. This simulation illustrates mostly subordinate views from the trail except in the immediate foreground.

- Photo-Simulation 6 – View from the east side of San Francisquito Road in the community of Green Valley toward the Alternative 2 transmission line alignment in an area where it would deviate from the alignment of the existing lines to avoid existing residences.
- Photo-Simulation 11 – View of the Haskell Canyon Switching Station site. View is looking southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 at a Forest Service gate one mile north of Pettinger Canyon Road.
- Photo-Simulation ANF Viewpoint of High Concern 3 – ANF Viewpoint of High Concern 3 is on an off road trail. The view captured is a panorama to the east toward the Alternative 2 transmission line alignment.
- Photo-Simulation ANF Viewpoint of High Concern 4 – ANF Viewpoint of High Concern 4 is along San Francisquito Canyon Road. The view is a panorama to the northeast toward the Alternative 2 transmission line alignment.
- Photo-Simulation ANF Viewpoint of High Concern 5 – ANF Viewpoint of High Concern 5 is along San Francisquito Canyon Road. The view is to the southwest toward the Alternative 2 transmission line alignment.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

The Alternative 2a transmission line actions would be consistent with implementing the Alternative 2 transmission line due to the similar alignment. The only difference is the Green Valley Re-route around the unincorporated community of Green Valley. The Alternative 2a transmission line would not follow the Section 368 Energy Corridor and USFS 1000-foot wide utility corridor containing LADWP's existing 230 kV BR-RIN and 500 kV PDCI lines, and would replace the Alternative 2 alignment from MP 6.3 to MP 11.3. Impacts to visual resources would generally be higher with this localized re-route because of strong contrasts associated with crossing undisturbed landscapes on the ANF, although visual impacts to residences in Green Valley would be lower.

The Alternative 2a transmission line would have 4.6 miles of overall residual high impacts, and 12.5 miles of moderate impacts. The Alternative 2a transmission line would have weak contrast levels for 47.8 miles and strong contrasts for 1.6 miles.

The Alternative 2a transmission line would have the longest distance of moderate impacts to Class B scenic attractiveness. Impacts to scenic attractiveness on private lands and public lands managed by the BLM would be generally moderate with predominantly strong visual contrast levels. Mitigation Measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, and VIS-15 would be generally implemented for the Project to reduce scenic attractiveness impacts. In specific locations (see Visual Resources Technical Report Appendix E), VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT would be implemented to reduce scenic attractiveness impacts. Refer to the Visual Resources Technical Report Appendix F, Contrast, Scenic Attractiveness Impacts, and Resulting Scenic Integrity Map.

Potential impacts to residences and other sensitive viewers would generally range from moderate to high. The Alternative 2a transmission line would have 4.6 miles of high visual impacts and 12.5 miles of moderate impacts to residences. Residences are at both ends of the Green Valley Localized Re-route, where it joins the Alternative 2 transmission line alignment. Mitigation Measures VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 would generally be used to minimize impacts on residences for this Alternative. In specific areas, VIS-2, VIS-3, VIS-9, and VIS-18 would be used in specific locations to reduce contrasts created as a result of the Project in areas of high residential visibility (see Visual Resources Technical Report Appendix E). Refer to the Visual Resources Technical Report Appendix F, Residential Viewpoints Inventory and Impacts map.

This portion of the Alternative 2a transmission line would also cross the Pacific Crest National Scenic Trail on the ANF, resulting in high impacts to potential viewers along the trail and to the High SIO in the area. Because this portion of the transmission line would roughly parallel the general alignment of the Pacific Crest National Scenic Trail for approximately two miles, the Alternative 2a transmission line would result in the high impacts to the trail within the ANF and to the High SIO in the area from the dominance of the transmission structures, the introduction of access roads and vegetation clearing that would contrast with the natural vegetation cover and undisturbed soils, and the potential axial views of Alternative 2a to users of the trail. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on recreation and preservation viewpoints. In specific areas where the Project would cross linear features, such as the Pacific Crest National Scenic Trail, VIS-1 would slightly reduce the dominance and contrast created as a result of the Project. Other specifically applied mitigation measures, including VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report, Appendix F, Park, Recreation, Preservation, and Transportation Sensitive Viewpoints Inventory and Impacts map.

Alternative 2a would have the longest distance of non-compliance with SIOs, representing 100% of the total 15.5-mile line length on the ANF. Within the ANF, the Alternative 2a transmission line would cross the Liebre-Sawmill Place and the Santa Clara Canyons Place. The Alternative 2a transmission line would have the following impacts on the desired condition of the landscape places:

Liebre-Sawmill Place

The Alternative 2a transmission line would alter dramatic desert panoramas and rugged fault-zone background views. It would have minimal impact on the marked transition of plant communities from desert to mixed sage, black oak, pine and juniper at higher elevations and to visitor access to free-flowing water in drainages. The Alternative 2a transmission line would alter the undeveloped appearance of the landscape and would increase the visible human influence on the natural setting.

Santa Clara Canyons Place

The Alternative 2a transmission line would alter dramatic canyon panoramas and rugged mountain background views of the Santa Clara Canyons Place. It would have minimal impact on oak woodlands, as this vegetation type would be avoided by the Alternative. It would have a minimal impact on the pastoral qualities of grazing activities. It would have a moderate impact on preservation of a well-defined age class mosaic in chaparral due to clearing of chaparral to widen existing access roads, for spur roads, and for structures and construction activities.

The new transmission line would represent a dominant deviation from the landscape character. Alternative 2a and the existing transmission lines would cumulatively result in altered landscape character with moderate to low character expression. Where no existing transmission lines are paralleled, the Alternative would also result in altered landscape character with moderate to low character expression. Scenic Integrity levels resulting from the Alternative would generally be Low to Unacceptably Low and would not meet the designated High SIOs or Moderate SIOs. The Project would result in Low Scenic Integrity for 4.4 miles and Very Low Scenic Integrity for 7.3 miles. Unacceptably Low Scenic Integrity levels would be created along 0.8 mile, and Moderate Scenic Integrity levels along 3.0 miles of Alternative 2a. Contrasts would be moderate to strong and the High and Moderate SIOs would not be achieved because the future desired character in these areas is to have the valued landscape character appear intact, with deviations repeating the form, line, color, texture and pattern common to the landscape character. Non-compliance with SIOs would occur along 15.5 miles of this Alternative. A plan amendment would be necessary for 12.5 miles of the Alternative because of the resulting drop of SIO levels (from High or Moderate Scenic Integrity to Low, Very Low or Unacceptably Low Scenic Integrity), and 3.0 miles would be subject to the Forest Supervisor's approval.

The Alternative 2a transmission line would have no high visual impacts to recreation and preservation viewpoints and 0.5 mile of moderate impacts. The Alternative 2a transmission line would cross the Pacific Crest National Scenic Trail, resulting in significant impacts to the High SIO in the area of the trail (see above discussion). The ANF Green Valley Camp Site would have immediate foreground views of the transmission line and impact the High SIO designation. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on recreation and preservation viewpoints. In specific areas where the Project would cross linear features, such as the Pacific Crest National Scenic Trail, VIS-1 would slightly reduce the dominance and contrast created as a result of the Project. Other specifically applied mitigation measures, including VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map.

The Alternative 2a transmission line would have 1.2 miles of high visual impacts to transportation viewpoints and 2.8 miles of moderate impacts. Views from San Francisquito Canyon Road, identified by the ANF as a viewpoint of high concern, would result in impacts to potential viewers. Views from Elizabeth Lake Road, a First Priority County Highway and Palmdale Scenic Highway, and Lake Hughes Road, a Second Priority County Scenic Highway, would result in impacts to potential viewers. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on travel viewpoints. Other specifically applied mitigation measures, including VIS-1, VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas.

Temporary Transmission Line

The temporary transmission line needed during the construction of multi-circuit towers would cross the Pacific Crest National Scenic Trail, resulting in temporary significant visual impacts. The foreground views from the trail and the High SIO in the area would be impacted, and the temporary transmission line would not meet the ANF Land Management Plan Standard ANF S1, although the impact would be temporary.

Tree trimming/removal areas would be parallel to San Francisquito Canyon Road and generally short in length. The trimming and removal would result in an incremental change to the visual setting. While the tree trimming and removal would alter the visual setting for viewers from the roadway and to the High SIO of the area, the limited nature of the clearing and the location along the roadway, which is already a linear clearing in the canyon, would result in moderate impacts.

CEQA Significance

Criterion VR1 - Have a substantial adverse effect on a scenic vista. No designated scenic vista points would have views of the new 230 kV transmission line or towers for Alternative 2a or Project components common to all action Alternatives.

Criterion VR2 - Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. No state scenic highways would have views of the new 230 kV transmission line or towers for Alternative 2a or Project components common to all action Alternatives.

Criterion VR3 - Substantially degrade the existing visual character or quality of the site and its surroundings. Moderate impacts to Class A Scenic Attractiveness would be considered significant and unavoidable impacts for the new 230 kV transmission line component of the Project. Moderate impacts to Class B and Class C Scenic Attractiveness would be considered less than significant impacts. For the Project components common to all action Alternatives, impacts would be low to moderate on Class B and C scenery, resulting in less than significant impacts. Although implementation of mitigation measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, VIS-15, VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT applies to this impact, it would not reduce this effect to a level of less than significant. No other mitigation measures have been identified that would reduce this impact to a level of less than significant.

Criterion VR4 - Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The 230 kV transmission line component of Alternative 2a and components common to all action Alternatives would not create a source of substantial light or glare. Impacts due to glare from the Project components would be less than significant, and mitigation measure VIS-8 would be implemented Project-wide to minimize the effects of construction light and glare.

Photo-Simulations

A total of seven viewpoints for photo-simulations on Alternative 2a were identified. The viewpoints are briefly described below. Refer to Appendix L of this Final EIS/EIR for photo-simulations and detailed descriptions of the ANF viewpoints of high concern. New access roads have not been depicted in these simulations, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

- Photo-Simulation 1 – View from the off-ramp of Highway 58 to the northeast toward the Alternative 2a transmission line alignment.
- Photo-Simulation 4 – View from Littlehorn Drive, off Leadhill Drive to the southwest toward the Alternative 2a transmission line alignment.
- Photo-Simulation 11 – View of the Haskell Canyon Switching Station site. View is looking southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 at a Forest Service gate one mile north of Pettinger Canyon Road.
- Photo-Simulation ANF Viewpoint of High Concern 3 – ANF Viewpoint of High Concern 3 is on an off road trail. The view captured is a panorama to the east toward the Alternative 2a transmission line alignment.
- Photo-Simulation ANF Viewpoint of High Concern 4– ANF Viewpoint of High Concern 4 is along San Francisquito Canyon Road. The view is a panorama to the northeast toward the Alternative 2a transmission line alignment.
- Photo-Simulation ANF Viewpoint of High Concern 5– ANF Viewpoint of High Concern 5 is along San Francisquito Canyon Road. The view is to the southwest toward the Alternative 2a transmission line alignment.
- Photo Simulation ANF Viewpoint of High Concern 6 – ANF Viewpoint of High Concern 6 is along the Pacific Crest National Scenic Trail. The view is a panorama to the northeast toward the Alternative 2a transmission line alignment.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

The Alternative 3 transmission line would have 9.0 miles of high residual visual impacts and 29.1 miles of moderate impacts. The Alternative 3 transmission line would have 68.1 miles of weak contrast levels and 0.8 mile of strong contrast.

Impacts to scenic attractiveness would be generally low, with moderate impacts occurring in some Class B areas with strong to moderate visual contrast levels. Mitigation Measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, and VIS-15 would be generally implemented for the Project to reduce scenic attractiveness impacts. In specific locations (see Visual Resources Technical Report Appendix E), VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT would be implemented to reduce scenic attractiveness impacts. Refer to the Visual Resources Technical Report Appendix F, Scenic Quality Inventory and Impacts Map.

The Alternative 3 transmission line would have 23 residences within the immediate foreground distance zone, and 6.3 miles of high visual impacts to residences. Potential impacts to residences and other sensitive viewers would generally range from predominantly low to areas of high and moderate impacts. Notable clusters of residences in the immediate foreground and foreground distance zones occur in the vicinity of the unincorporated communities of Agua Dulce and Bouquet Canyon, resulting in high and moderate impacts. Refer to the Visual Resources Technical Report Appendix F, Residential Viewpoints Inventory and Impacts map. Mitigation Measures VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 would generally be used to minimize impacts on residences for the Alternative 3 transmission line. In specific areas, VIS-2, VIS-3, VIS-9, and VIS-18 would be used in specific locations to reduce contrasts created as a result of the Project in areas of high residential visibility (see Visual Resources Technical Report Appendix E). Refer to the Visual Resources Technical Report Appendix F, Residential Viewpoints Inventory and Impacts map.

Alternative 3 would be in non-compliance with SIOs for the shortest distance of the Alternatives, representing 80.0% (3.6 miles) of the total 4.5-mile line length on the ANF. Within the ANF, the Alternative 3 transmission line would cross the Soledad Front Country Place. The Alternative 3 transmission line would have the following impacts on the desired condition of the landscape place:

> Soledad Front Country Place
> The Alternative 3 transmission line would generally not alter pine and juniper stands and would have minimal impact on preservation of a well-defined age class mosaic with patches in chaparral. The transmission line would alter dramatic canyon and rugged mountain views of the Soledad Front Country Place.

The new transmission line would represent a dominant deviation from the landscape character and, with the existing transmission lines, would cumulatively result in altered landscape character with moderate to low character expression. Scenic Integrity levels resulting from the Alternative would generally be Moderate, Low, Very Low or Unacceptably Low and would not meet the designated High SIOs. The Project would result in Very Low Scenic Integrity for 1.3 miles and Low Scenic Integrity for 2.1 miles. Unacceptably Low Scenic Integrity levels would be created along 0.2 mile of Alternative 3, and Moderate Scenic Integrity along 0.9 mile. Contrasts would be moderate to strong and the High and Moderate SIOs would not be achieved because the future desired character in these areas is to have the valued landscape character appear intact, with deviations repeating the form, line, color, texture and pattern common to the landscape character. Compliance with SIOs would not occur along 3.6 miles of this Alternative, none of which are subject to the Forest Supervisor's approval (-1 Scenic Integrity underachievement). A plan amendment would be necessary for 3.6 miles of the Alternative because of the resulting drop of Scenic Integrity levels (from High or Moderate SIO to Moderate, Very Low, or Unacceptably Low SIO) except in localized areas where visibility is limited or the resulting SIO is met (0.9 mile). This Alternative would be located entirely within a designated utility corridor on the ANF.

The Alternative 3 transmission line would have 1.8 miles of high impacts and the 4.3 miles of moderate impacts to recreation and preservation viewpoints. The Alternative 3 transmission line would cross the Pacific Crest National Scenic Trail, resulting in impacts to potential viewers along the trail and to the High SIO in this area of the ANF. The Alternative 3 transmission line would also cross trails within the MRCA Ritter Ranch, resulting in significant impacts to recreationists. The Veluzat Motion Picture Ranch would have foreground views of the Alternative 3 transmission line, resulting in moderate impacts to potential viewers. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on recreation and preservation viewpoints. In specific areas where the Project would cross linear features, such as the Pacific Crest National Scenic Trail, VIS-1 would slightly reduce the dominance and contrast created as a result of the Project. Other specifically applied mitigation measures, including VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map.

The Alternative 3 transmission line would have 1.5 miles of high impacts and 7.0 miles of moderate impacts to transportation viewpoints. The Alternative 3 transmission line would cross Elizabeth Lake Road, a First Priority County Highway and Palmdale Scenic Highway; Godde Hill Road, a Second Priority County and Palmdale Scenic Highway; and West Avenue K and Vasquez Canyon Road, Second Priority County Scenic Highways, resulting in significant impacts. Views from the Sierra Highway, Davenport Road, West Avenue I and 110th Street West, all Second Priority County Scenic Highways, would result in significant impacts to potential viewers. Mitigation measures VIS-5, VIS-6, VIS-7, VIS-8, VIS-10, VIS-11, VIS-12, VIS-13, VIS-14 and VIS-15 applied across the Project would reduce contrasts and impacts on travel viewpoints. Other specifically applied mitigation measures, including VIS-1, VIS-2, VIS-9, VIS-17, VIS-18, and THREE-CIRCUIT, would minimize the effects of the Project on sensitive viewers in these areas. Refer to the Visual Resources Technical Report Appendix F, Recreation and Travel Viewpoints Inventory and Impacts map.

CEQA Significance

Criterion VR1 - Have a substantial adverse effect on a scenic vista. No designated scenic vista points would have views of the new 230 kV transmission line or towers for Alternative 3 or Project components common to all action Alternatives.

Criterion VR2 - Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. No state scenic highways would have views of the new 230 kV transmission line or towers for Alternative 3 or Project components common to all action Alternatives.

Criterion VR3 - Substantially degrade the existing visual character or quality of the site and its surroundings. Moderate impacts to Class A Scenic Attractiveness would be considered significant and unavoidable impacts for the new 230 kV transmission line component of the Project. Moderate impacts to Class B and Class C Scenic Attractiveness would be considered less than significant impacts. For the Project components common to all action Alternatives, impacts would be low to moderate on Class B and C scenery, resulting in less than significant impacts. Although implementation of mitigation measures VIS-5, VIS-8, VIS-12, VIS-13, VIS-14, VIS-15, VIS-9, VIS-16, VIS-17, VIS-18, and THREE-CIRCUIT applies to this impact, it would not reduce this effect to a level of less than significant. No other mitigation measures have been identified that would reduce this impact to a level of less than significant.

Criterion VR4 - Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The 230 kV transmission line component of Alternative 1 and components common to all action Alternatives would not create a source of substantial light or glare. Impacts due to glare from the Project components would be less than significant, and mitigation measure VIS-8 would be implemented Project-wide to minimize the effects of construction light and glare.

Photo-Simulations

A total of six viewpoints for photo-simulations Alternative 3 were identified. The viewpoints are briefly described below. Refer to Appendix L of this Final EIS/EIR for photo-simulations and detailed descriptions of the ANF viewpoints of high concern. New access roads have not been depicted in these simulations, and some landform and vegetation contrasts are not as they would appear as a result of the Project.

- Photo-Simulation 1 – View from the off-ramp of Highway 58 to the northeast toward the Alternative 3 transmission line alignment.
- Photo-Simulation 3 – View from intersection of West Avenue I and 90th Street at edge of residential subdivision in the unincorporated community of Antelope Acres southwest toward the Alternative 3 transmission line alignment.
- Photo-Simulation 9 – View from the Sierra Highway at the Davenport Road intersection to the west toward the Alternative 3 transmission line alignment.
- Photo-Simulation 10 – View from the southwest corner of the Sierra Highway and Agua Dulce Road to the northeast toward the Alternative 3 transmission line alignment.

- Photo-Simulation 11 – View of the Haskell Canyon Switching Station site. View is looking southeast from City Highline Motorway Fire Road/Forest Service Route 6N21 at a Forest Service gate one mile north of Pettinger Canyon Road.
- Photo Simulation ANF Viewpoint of High Concern 7 – ANF Viewpoint of High Concern 7 is along the Sierra Highway near the Agua Dulce Road intersection. The view is to the northeast toward the Alternative 3 transmission line alignment.

Comparison of Alternatives

Overall, Alternative 1 would have the greatest overall residual impacts to visual resources and would also have the second greatest distance of impacts to landscapes on the ANF with established SIOs of High and Moderate, which would require a Project-specific ANF Land Management Plan amendment for 11.4 miles of SIO non-compliance. Alternative 1 would have far more extensive areas of strong and moderate visual contrast than any other Alternative, is the longest Alternative, and would cross the most miles of the ANF. Alternative 1 would have the greatest visual impacts to residences, recreation and preservation viewpoints of high concern, and high concern transportation viewpoints both on and off of the ANF. This Alternative would also have the most miles of high impacts to the Pacific Crest National Scenic Trail outside of the ANF.

Alternative 2a would have more areas of strong visual contrast than Alternatives 2 and 3 due to the Green Valley Localized Re-route crossing through relatively undisturbed landscape. Alternative 3 would have greater overall residual impacts than Alternatives 2 and 2a, while Alternatives 2 and 2a would have similar levels of overall residual impacts.

Alternative 2a would have the highest mileage of SIO non-compliance on the ANF if this Alternative was approved, and would have the greatest impacts to the Pacific Crest National Scenic Trail within the ANF. Both Alternatives 2 and 3 would also require Project-specific ANF Land Management Plan amendments for impacts to the Pacific Crest National Scenic Trail, and for impacts to the established SIOs of High and Medium on the ANF.

Alternative 1 would not require a Project-specific ANF Land Management Plan amendment for the Pacific Crest National Scenic Trail; however, high impacts to potential viewers on the trail would occur outside the ANF, and this Alternative would require a Project-specific ANF Land Management Plan amendment for 3.6 miles of SIO non-compliance. All Alternatives would require a Project-specific ANF Land Management Plan amendment for the Project to cross the ANF due to impacts to established SIOs, with Alternative 2a non-compliant for the longest distance.

4.2.10 CULTURAL RESOURCES

Introduction

This section assesses potential impacts to cultural resources in the BRRTP vicinity for Alternatives 1, 2, 2a, and 3 and addresses mitigation planning. For the BRRTP, mitigation planning would comply with NEPA and CEQA and would also be integrated into the Section 106 process through a Programmatic Agreement (PA) being prepared by the USFS, BLM, and California State Historic Preservation Office (SHPO). LADWP is an invited signatory for the

PA. The ANF invited the Advisory Council on Historic Preservation (ACHP) to participate in the development of the PA; in a letter of September 23, 2009, the ACHP elected not to participate. The PA, along with a Construction Phase Management Plan (CPMP), would set forth procedures for identifying, evaluating, and managing cultural resources along the selected Alternative before and during construction. A Historic Properties/Historical Resources Management Plan (HP/HRMP) is being prepared that would set forth procedures for managing cultural resources during operation and maintenance of the BRRTP

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to cultural resources are addressed in this analysis:

- Potential impacts to historical homesteads, ranches, prehistoric habitation and historic mining, and prehistoric village sites along the Proposed Action and Alternatives.
- Impacts to Old Ridge Route, a nationally listed historic property with several contributing elements.
- Consultation with various interested/affected Tribes and Tribal Members

Impact Assessment Methodology

The impact assessment methodology used in this section is consistent with both the National Historic Preservation Act (NHPA) and CEQA.

The Section 106 process of the NHPA requires identifying cultural resources potentially affected by an undertaking, determining the effects of that action, and identifying measures to avoid, reduce, or otherwise mitigate those effects.

For the purposes of the impact analysis, previously recorded cultural resources and areas defined as having low, moderate, or high sensitivity for cultural resources within a 500-foot corridor (250 feet of the centerlines) were analyzed. The proposed ROW for the new transmission line would be only 200 feet (100 feet from centerline). The wider corridor was used to increase the quantity and quality of data available for the impact analysis. Detailed information on these resources is presented in the Cultural Resources Technical Report. The technical report is confidential; federal and State guidelines direct or require government agencies to maintain confidentiality of any maps and reports that contain specific information on the location and nature of cultural resources (Section 304 of the NHPA, 36 CFR 800.11(c)(1)).

Under Section 106 of the NHPA, an adverse effect (or impact) occurs when an undertaking may alter, directly or indirectly, any of the characteristics that qualify a resource for inclusion in the National Register of Historic Places (National Register) in a manner that would diminish its integrity of location, design, setting, materials, workmanship, feeling, or association. Potential impacts could include (36 CFR 800.5(a)(2)):

- “Physical destruction of or damage to all or part of the property;

- Alteration of a property . . . that is not consistent with the Secretary's [of the Interior] Standards for the Treatment of Historic Properties (36 CFR 68);
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration . . . ; and
- Transfer, lease, or sale of the property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance."

According to CEQA Section 15064.5, a project is considered to have a significant impact if it causes a substantial adverse change in the significance of a historical resource or unique archaeological resource. Substantial adverse change in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired or diminished.

Impacts can be categorized according to the source of the impact. Potential sources of impacts to cultural resources with National Register listing eligibility or California Register listing eligibility that are considered for this Final EIS/EIR include:

- Ground disturbance resulting from construction, operation, maintenance, and decommissioning of the transmission line and related facilities, and from erosion caused by ground disturbance;
- Visual impacts resulting from the presence of transmission structures and other facilities;
- Access-related impacts resulting from increased vandalism due to presence of new or improved roads; and
- Changes in land status that result in reduced legal protection.

Cultural resources within the Project area would be subject to both direct and indirect impacts caused by the Proposed Action and Alternatives.

Direct impacts associated with the BRRTP would result primarily from ground disturbing activities associated with the construction of the transmission line, switching stations, staging areas and other facilities. These activities include, but are not limited to, geotechnical boring, clearing vegetation, grading of new access roads, improving existing access roads, installing tower foundations, assembling and installing towers, installing guy wires, stringing and tensioning conductors, and restoration and re-vegetation measures. These activities can disturb or compact soils, crush artifacts, and alter prehistoric and historic features. Each tower site would include a working area of approximately 200 feet square (about one acre). Access roads would typically be 16 feet wide. Helicopter landing zones would consist of a 0.1-acre landing pad and a single 2-acre fly yard spaced approximately every two miles. Pulling and tensioning sites would measure approximately 200 feet by 500 feet (2.3 acres) and some would extend outside the proposed 200-foot ROW. Although ground disturbing activities are often temporary, damage to cultural resources would be permanent.

Direct visual impacts may occur to some types of cultural resources with National Register listing eligibility or California Register listing eligibility (e.g., Native American sacred sites, historic trails, and certain classes of historic buildings) when modern structures (e.g., transmission towers) are introduced into the viewsheds of these resources. The term “viewshed” refers to an area of land visible from a fixed vantage point, such as a cultural resource. The introduction of modern structures into the viewshed of a cultural resource may adversely affect the integrity of the historic setting. Integrity of setting means that the surrounding landscape has changed very little since the period of importance for the resource. Setting may include topography, vegetation, simple man-made features, and relationships between buildings, other features, and open space. Archaeological sites, if they are considered significant because of the scientific data they contain rather than their setting, would likely not be adversely affected by visual intrusions. On the recommendation of USFS staff, LADWP would perform a visual effects analysis for cultural resources after a preferred route is selected and a cultural resource survey has been performed. Methods would be detailed in the CPMP.

Indirect impacts to cultural resources may result from activities that occur near, but not directly on, cultural resources. Indirect impacts are separated by time or space from project activities. For example, indirect access-related impacts may occur to cultural resources when public accessibility is increased to a previously remote area because of new or improved roads, equipment staging areas, helicopter fly yards, and fueling points. The likelihood of unauthorized artifact collecting and destruction, intentional or inadvertent, of prehistoric and historic structures or features increases with ease of access. Recreational use, overland vehicle travel, and vandalism of archaeological sites and standing structures degrade the integrity of these resources and can affect their eligibility to the National Register and California Register.

Using cultural resource survey data, National Register and California Register eligibility status for recorded cultural resources, and environmental data for unsurveyed portions of the study area, each 0.1-mile unit along each Alternative transmission line corridor was assigned a cultural resource sensitivity level of high, moderate, or low. Cultural resource sensitivity level and the amount of ground disturbance anticipated within each of the 0.1-mile units was then used to assign an initial impact level of high, moderate, low, or no identifiable impact.

High – A high level of impact to cultural resources would result if the construction, operation, or maintenance of the transmission line has the potential to cause substantial ground disturbance or other adverse change to cultural resources defined as having high sensitivity or unsurveyed land defined as having high sensitivity for containing cultural resources.

Moderate – A moderate impact to cultural resources would result if the construction, operation, or maintenance of the Project would potentially cause ground disturbance or other adverse change to the condition of cultural resources or lands defined as moderately sensitive. Moderate impacts would also occur where construction, operation, or maintenance of the transmission line would result in minor or minimal ground disturbance or other adverse change at or near resources or land defined as high sensitivity.

Low – A low impact to cultural resources would result if the construction, operation, or maintenance of the Project would potentially cause any amount of ground disturbance or other adverse changes to cultural resources or lands that have been defined as having low sensitivity. Areas are also classified as low impact if they have been previously surveyed intensively for cultural resources and no cultural resources were identified. Such areas could still potentially contain buried archaeological sites that are not visible on the surface.

No Identifiable Impact - No identifiable impact would be indicated where no measurable or suspected adverse impact would occur to any cultural resources. These areas would include only those lands where past disturbance, either human-caused or natural, precludes any possibility of containing intact cultural resources.

Significance Criteria

Under NEPA and Section 106, impacts to cultural resources are addressed regardless of whether they are on private, city, state, and federal land. Under CEQA, impacts are addressed only for cultural resources on city, State or private land.

The responsible federal agency official must take into account the effects of an undertaking on historic properties (i.e., properties eligible to be listed to the National Register). To be eligible to be listed to the National Register, a resource must meet one or more of the criteria of significance (36 CFR 60.4) and retain integrity; such resources must be managed in compliance with the ACHP's regulations implementing Section 106 of the NHPA, found at 36 CFR 800. Effects to cultural resources are determined in accordance with the NHPA, which permits three options: "no effect," "no adverse effect," and "adverse effect." "Effects" under the NHPA are comparable to "impacts" under NEPA. ACHP regulations at 36 CFR 800.8 specifically address the integration of NEPA and NHPA compliance.

CEQA requires that a lead agency, such as LADWP, ask several questions pertaining to cultural resources:

- Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?
- Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
- Would the project disturb any human remains, including those interred outside of formal cemeteries?

Mitigation Planning

Because most of land within the BRRTP Alternatives has not been surveyed for cultural resources, and most known cultural resources have not been evaluated for National Register or California Register eligibility, mitigation measures have not been prepared for impacts specific to individual cultural resources. Rather, a PA and associated management plans would be prepared that addresses measures to avoid or reduce adverse effects of the BRRTP on cultural resources.

TABLE 4.2.10-1. MITIGATION MEASURES – CULTURAL RESOURCES

Mitigation Measure	Description
CUL-1	To avoid or reduce impacts to cultural resources on federal, State, city and private land, the ANF, BLM, California SHPO, and LADWP will develop and implement a Programmatic Agreement (PA) to comply with Section 106 of the NHPA, in accordance with the implementing regulations at 36 CFR 800.14(b). As stipulated in 36 CFR 800.14(b), the PA will document the alternate procedures and guidelines to resolve potential adverse effects or impacts that may result from the construction, operation, and maintenance of the BRRTP. The development of the PA will involve the appropriate government-to-government consultations pursuant to 36 CFR 800.16(f)(1) and invite participation by interested groups, organizations, and individuals, per 36 CFR 800.16(e)(2). The PA will require a Construction Phase Management Plan (CPMP) and a Historic Properties/Historical Resources Management Plan (HP/HRMP). Provisions of the CPMP will be implemented before and during construction; provisions of the HP/HRMP will be implemented following construction during operation and maintenance of the BRRTP. The PA will be signed by the signatories and invited signatories before issuance of the Record of Decision (ROD) by the ANF and BLM.

For Section 106 compliance, a PA may be used when, as in the case of the BRRTP, effects on historic properties cannot be fully determined before approval of the undertaking (i.e., issuance of the ROD) (36 CFR 800.14(b)). The PA would stipulate specific roles and responsibilities for signatories and invited signatories governing the treatment of known and unknown cultural resources that may be affected by the undertaking. Stipulations include: 1) identification of the area of potential effects (APE) for the selected Alternative; 2) procedures for completing cultural resource survey within the APE; 3) procedures for evaluating the National Register and California Register eligibility of identified cultural resources; 4) steps in assessing effects; 5) appropriate measures for mitigating adverse effects on cultural resources that cannot be avoided; 6) when, how, where, and by whom construction monitoring would be carried out; 7) appropriate responses to the discovery of unanticipated cultural resources during construction; 8) the contents and schedule for technical reports resulting from surveys, test excavations, data recovery excavations, documentation of historic structures, and other studies; and 9) procedures for ensuring timely review by appropriate agencies throughout the process.

As mentioned above, this PA would require a CPMP and an HP/HRMP. The CPMP would provide requirements for the management of cultural resources before and during construction of the BRRTP. The HP/HRMP would guide activities and provide protection and conservation of important cultural resources during the operation and maintenance phase of the BRRTP.

The CPMP would provide detailed descriptions of known resources in the APE, and how each of the resources would be avoided, preserved in place, or otherwise treated to mitigate potential Project effects from construction. The treatment of isolated finds, unevaluated properties, and previously unknown archaeological and historic resources discovered during construction, as well as archaeological monitoring requirements, would also be addressed in the CPMP.

The HP/HRMP would identify cultural resources within the APE that may be affected by operations and maintenance activities associated with the BRRTP and stipulate procedures for their long-term management. It would address measures and treatments to avoid, minimize, or mitigate potential impacts to these resources (e.g., management roles, unanticipated discoveries, specific protection measures, curation procedures, archaeological monitoring requirements, worker training).

In effect, implementation of the PA would ensure that agreed-upon management strategies would be in place to address cultural resource conflicts. The general goal would be to avoid or minimize impacts whenever and wherever feasible, but other site-specific measures (e.g., test excavation, data recovery) would be implemented in instances where potential impacts are deemed unavoidable, or where unanticipated discoveries occur during construction, operations or maintenance. By implementing the CPMP before and during construction, and with the implementation of the HP/HRMP to address and identify long-term resource management measures during the operation and maintenance phase of the Project, overall initial impacts to cultural resources identified below would be reduced to low to moderate residual impacts, regardless of which Alternative is selected.

Because of the continuing need for managing cultural resources during operations and maintenance (e.g., during emergency repairs, the unanticipated discovery of buried cultural resources), the level of residual impacts would be the same for each Alternative. For this reason, the comparison of Alternatives for impacts to cultural resources presented in this section is based on initial impacts rather than residual impacts.

Three-Circuit Tower Mitigation

A three-circuit lattice tower design would be implemented as described in Chapter 2, Section 2.2.4, at the locations shown in Figure 2-17, Three-Circuit Tower Mitigation Map. This mitigation measure would be treated as any other component of the BRRTP, and effects on cultural resources would be addressed according to the provisions of the PA, CPMP, and HP/HRMP.

Helicopter Mitigation

Helicopter Mitigation would be implemented, as described in Chapter 2, Section 2.2.3, in steep areas of the ANF where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 2-22, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 2-22, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP. This mitigation measure would be treated as any other component of the BRRTP, and effects on cultural resources would be addressed according to the provisions of the PA, CPMP, and HP/HRMP.

CEQA 15126.4(3)(A) suggests that preservation in place is the preferred manner of mitigating impacts to archaeological sites because it maintains the relationship between artifacts and the archaeological context, and could also help to avoid conflicts with religious or cultural values of groups feasibly associated with the site. Although the PA would cover the necessary management elements of cultural resources in the Project area as part of the federal Section 106 process, these procedures would also ensure compliance with the CEQA process.

Summary of Impact Analysis Results

As discussed above, initial impacts were assessed by comparing the anticipated amount of ground disturbance during construction with the cultural resource sensitivity of each 0.1-mile-long, 500-foot wide unit within the Alternative. Cultural resource sensitivity was determined by an analysis of the distribution and nature of known cultural resources, the distribution of surveyed areas that are known not to contain cultural resources on the ground surface, and, for unsurveyed units, steepness of the terrain and distance to water, both of which are associated with the distribution of cultural resources. The amount of ground disturbance in each 0.1-mile unit was based on structure type, slope, the need for improved access, and other variables. The ground disturbance model developed for this DEIS/DEIR distinguishes between temporary and permanent ground disturbance. However, for cultural resources, temporary and permanent disturbance can both result in permanent destruction of cultural resources, which are non-renewable, so the distinction between the two types of disturbance is not meaningful.

No Action Alternative

Under the No Action Alternative, there would be no ground disturbing activities associated with the construction of the BRRTP transmission line and other facilities, such as clearing vegetation, grading of new access roads, improving existing access roads, installing tower foundations, assembling and installing towers, stringing and tensioning conductors, and any restoration and re-vegetation measures. No cultural resources would be adversely affected.

Also, under the No Action Alternative, there would be no visual impacts to cultural resources resulting from modern structures being introduced into a historical setting.

There would also be no change in public accessibility to previously remote areas, so there would be no increased potential for vandalism of cultural resources.

Overall, the No Action Alternative would result in no impacts to cultural resources.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

From the proposed Haskell Canyon Switching Station to the Castaic Power Plant, 4.6 miles, or 38.3 percent, has been surveyed, with 7.4 miles remaining unsurveyed. The entire corridor would be surveyed for cultural resources before construction. Known cultural resources include the Old Ridge Route, listed in the National Register, and the Olive Power Plant 1 Transmission Line, which has been determined eligible to be listed to the National Register and is listed in the California Register. Both qualify as historical resources under CEQA. The other four known cultural resources are currently unevaluated for National Register or California Register listing eligibility, but all are considered eligible for this analysis.

Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according CUL-1. Implementation of the HP/HRMP would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, initial and residual impacts would be low to moderate.

Reconductoring
Thirty-eight cultural resources are known to exist within 250 feet of the centerline, but reconductoring would not involve extensive ground disturbance. Before construction, cultural resource surveys would be performed in locations proposing ground disturbance. Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according to CUL-1. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, initial and residual impacts would be low.

New Haskell Canyon Switching Station
There are three historic sites within 250 feet of the proposed Haskell Canyon Switching Station grading area. One of these is the Olive Power Plant 1 Transmission Line, which has been determined eligible to be listed to the National Register and is listed in the California Register. It is considered a historical resource under CEQA. The two other known cultural resources at the proposed Haskell Canyon Switching Station site are currently unevaluated for National Register or California Register eligibility; however, they are considered eligible in this analysis. Previously recorded and newly discovered cultural resources would be identified and evaluated, and adverse effects would be mitigated according to CUL-1. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, initial and residual impacts would be low to moderate.

Expansion of Barren Ridge Switching Station
There are no recorded sites within 250 feet of the planned expansion area for the Barren Ridge Switching Station, but there has also been no cultural resources survey in this area.

Cultural resources would be identified and evaluated and adverse effects would be mitigated according to the stipulations in the PA and CPMP. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, initial and residual impacts would be low to moderate.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

Along the Alternative 1 transmission line, 31.1 miles (37 percent) have been previously surveyed for cultural resources, with 52.1 miles (63 percent) remaining unsurveyed. There are 41 previously recorded cultural resources, of which six are either not eligible to be listed to the National Register or are isolated finds. Thirty-one resources are unevaluated (assumed to be eligible to be listed), two are listed in the National Register or California Register, and two are missing inventory forms, but are here assumed to be eligible.

The Old Ridge Route, along with its contributing elements, is National Register-listed, and the Olive Power Plant 1 Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. Both qualify as historical resources under CEQA. ANF Staff are especially concerned that, because a portion of the Alternative 1 transmission line would parallel the Old Ridge Route, there would be adverse visual effects of the transmission line on this historic property. These visual impacts may be immitigable.

For this analysis, it is assumed that isolated finds are not eligible to be listed to either the National Register or California Register. However, when the survey of the selected Alternative is undertaken, all isolated finds would be re-recorded and evaluated for their National Register and California Register eligibility.

Based on the distribution of known cultural resources, the surveyed areas lacking identified resources, and the environmental characteristics of unsurveyed areas, 2.4 percent (2.0 miles) of the Alternative 1 transmission line would have a high initial impact on cultural resources as a result of possible physical disturbance, 38.6 percent (32.1 miles) would have a moderate initial impact, and 59.0 percent (49.1 miles) would have a low initial impact. Furthermore, visual impacts on the Old Ridge Route would be high.

Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according to the stipulations in the PA and CPMP. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. However, even with implementation of CUL-1, residual impacts would be high because of the immitigable visual impacts on the Old Ridge Route.

Under CEQA, Alternative 1 impacts to many historical and archaeological resources would be less than significant with mitigation. However, visual impacts to the Old Ridge Route would be potentially significant.

Alternative 2—LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on

the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Along the Alternative 2 transmission line, 13.3 miles (22 percent) have been previously surveyed for cultural resources, with 47.9 miles (78 percent) remaining unsurveyed. There are 22 previously recorded cultural resources, of which seven are either not eligible to be listed to the National Register or are isolated finds. Thirteen resources are unevaluated (assumed eligible to be listed), one is listed in the California Register, and one is missing an inventory form, but is assumed to be eligible to be listed.

The Olive Power Plant 1 Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. It is a historical resource under CEQA. It is unlikely that there would be physical damage to this resource caused by the Alternative 2 transmission line, and a new transmission line would be unlikely to have a visual impact on an existing transmission line.

For this analysis it is assumed that isolated finds are not eligible to be listed to either the National Register or California Register. However, when the survey of the selected Alternative is undertaken, all isolated finds would be re-recorded and evaluated for their National Register and California Register eligibility.

Based on the distribution of known cultural resources, the surveyed areas lacking identified resources, and the environmental characteristics of unsurveyed areas, 12.7 percent (7.8 miles) of Alternative 2 would have a high initial impact on cultural resources, 7.5 percent (4.6 miles) would have a moderate initial impact, and 79.6 percent (48.7 miles) would have a low initial impact.

Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according to the stipulations in the PA and CPMP. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, residual impacts would be low to moderate.

Under CEQA, Alternative 2 impacts would be less than significant with mitigation.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

Along the Alternative 2a transmission line, 16.3 miles (26 percent) have been previously surveyed for cultural resources, with 46.3 miles (78 percent) remaining unsurveyed. There are 22 previously recorded cultural resources, of which seven are either not eligible to be listed to the National Register or are isolated finds. Thirteen resources are unevaluated (assumed eligible to be listed), one is listed in the California Register, and one is missing an inventory form, but is assumed eligible to be listed.

The Olive Power Plant 1 Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. It is a historical resource under CEQA. It is unlikely that there would be physical damage to this resource caused by the Alternative 2a transmission line, and a new transmission line would be unlikely to have a visual impact on an existing transmission line.

This analysis assumes that isolated finds are not eligible to be listed to either the National Register or California Register. However, when the survey of the selected Alternative is undertaken, all isolated finds would be re-recorded and evaluated for their National Register and California Register eligibility.

Based on the distribution of known cultural resources, the surveyed areas lacking identified resources, and the environmental characteristics of unsurveyed areas, 12.5 percent (7.8 miles) of Alternative 2a would have a high initial impact on cultural resources, 9.6 percent (6.0 miles) would have a moderate initial impact, and 78.0 percent (48.8 miles) would have a low initial impact.

Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according to the stipulations in the PA and CPMP. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, residual impacts would be low to moderate.

Under CEQA, Alternative 2a impacts would be less than significant with mitigation.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on

the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Along Alternative 3 transmission line, 17.8 miles (24 percent) have been previously surveyed for cultural resources, with 57.6 miles (76 percent) remaining unsurveyed. There are 33 previously recorded cultural resources, of which seven are either not eligible to be listed to the National Register or are isolated finds. Twenty-three resources are unevaluated (assumed eligible to be listed), one is listed in the California Register, and two are missing inventory forms but are assumed eligible to be listed until otherwise determined.

The Olive Power Plant 1 Transmission Line has been determined eligible to be listed to the National Register and is listed in the California Register. It is a historical resource under CEQA. It is unlikely that there would be physical damage to this resource caused by the Alternative 3 transmission line, and a new transmission line would be unlikely to have a visual impact on an existing transmission line.

For this analysis it is assumed that isolated finds are not eligible to be listed to either the National Register or California Register. However, when the survey of the selected Alternative is undertaken, all isolated finds would be re-recorded and evaluated for their National Register and California Register eligibility.

Based on the distribution of known cultural resources, the surveyed areas lacking identified resources, and the environmental characteristics of unsurveyed areas, 2.0 percent (1.5 miles) of Alternative 3 would have a high initial impact on cultural resources, 14.3 percent (10.8 miles) would have a moderate initial impact, and 83.7 percent (63.1 miles) would have a low initial impact.

Previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be mitigated according to PA and CPMP stipulations. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of CUL-1, residual impacts would be low to moderate.

Under CEQA, Alternative 3 impacts would be less than significant with mitigation.

Comparison of Alternatives

Table 4.2.10-2 summarizes the known cultural resources and amount of previous survey along the 230 kV double-circuit transmission line each action Alternative, and Table 4.2.10-3 summarizes the anticipated initial impacts associated with each Alternative. Listing eligible resources delineated in Table 4.2.10-2 include sites determined eligible for listing, unevaluated sites, and any sites that were missing inventory forms.

TABLE 4.2.10-2. CULTURAL RESOURCE AND SURVEY SUMMARY FOR TRANSMISSION LINE CORRIDORS

Transmission Line Component of Alternative	Total Distance	Previously Surveyed		Eligible Cultural Resources
		Miles	%	
1	83.1	31.1	*37.4*	35
2	60.7	13.3	*21.7*	15
2a	62.5	16.3	*26.0*	15
3	75.5	17.8	*23.6*	26

TABLE 4.2.10-3. CULTURAL RESOURCE IMPACT SUMMARY FOR TRANSMISSION LINE CORRIDORS

Transmission Line Component of Alternative	Total Distance	High Impact		Moderate Impact		Low Impact		No Identifiable Impact	
	Miles	Miles	%	Miles	%	Miles	%	Miles	%
1	83.1	2.0	*2.4*	32.1	*38.6*	49.1	*59.0*	0	*0*
2	60.7	7.8	*12.7*	4.6	*7.5*	48.7	*79.6*	0	*0*
2a	62.5	7.8	*12.5*	6.0	*9.6*	48.8	*78.0*	0	*0*
3	75.5	1.5	*2.0*	10.8	*14.3*	63.1	*83.7*	0	*0*

Portions of the transmission line corridor for each of the Alternatives have been surveyed intensively and systematically for cultural resources between 1985 and 2010. The Alternative 1 transmission line corridor has the highest percentage of land surveyed within 250 feet of the centerline, at 37.4 percent. The amount of survey along the remaining transmission line corridors varies between 21.7 percent and 26.4 percent. The distribution of surveyed areas is not even; some portions of the transmission line corridors have been subjected to much more intensive survey than other portions. Nonetheless, the total amount of survey in each case is roughly comparable. Among the transmission lines for each Alternative, the total number of cultural resources that are listed in, eligible to be listed to, or unevaluated for listing eligibility (assumed eligible to be listed) to the National Register and California Register (excluding listing ineligible sites and isolated finds) varies. However, the densities appear to be comparable, ranging from one to two cultural resources per mile. One cultural resource (Olive Power Plant 1 Transmission Line) that has been determined eligible to be listed to the National Register and is listed in the California Register would be crossed by the transmission line in all four Alternatives. The Alternative 1 transmission line is the only transmission line that would have a resource (the Old Ridge Route and various contributing elements) currently listed in the National Register.

There appear in Table 4.2.10-2 to be important differences among the transmission lines for each Alternative in the relative proportions of high initial impact, moderate initial impact, and low initial impact areas. However, in every case, most of the land has not been surveyed for cultural resources, and the impact levels are based on predictions rather than actual assessments of effects under Section 106 of the NHPA. Also, while high impact areas would make up a small proportion of the land within 250 feet of the centerline of the Alternative 1 transmission line, the visual impacts of a transmission line on the Old Ridge Route may not be mitigable. In contrast, while the Olive Power Plant 1 Transmission Line may be affected by the transmission line for each Alternative, the effects, visual and physical, may not be adverse. Finally, regardless of the selected Alternative, previously recorded and newly discovered cultural resources would be identified and evaluated and adverse effects would be avoided or mitigated according to the stipulations in the PA and CPMP. Implementation of CUL-1 would ensure continuing management and protection of cultural resources during operation and maintenance of the BRRTP. With implementation of the CUL-1, residual impacts (except for visual impacts of Alternative 1 on the Old Ridge Route) would be low to moderate.

Tables detailing the results of the impact analysis are in the confidential Cultural Resource Technical Report.

4.2.11 WILDFIRE AND FUELS

Introduction

Potential wildfire and fuels impacts have been analyzed for the Proposed Action and Alternatives. The focus of the analysis was on how the Proposed Action and Alternatives would alter the effectiveness of firefighting, whether the Project would increase the risk of a wildfire event, and whether the Project would increase ignition potential. The Wildfire and Fuels Technical Report, in Volume III, contains additional information used in assessing impacts and establishing mitigation measures related to wildfire and fuels.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to fire safety are addressed in this analysis:

- During wildfires in the Angeles National Forest, additional above-ground transmission lines could adversely affect ground and aerial fire suppression efforts and compromise safety, as well as potentially affecting flight paths and staging areas;
- Transmission lines may fall and start fires

Impact Assessment Methodology

The impact assessment for the Project was completed within the BRRTP fireshed. The BRRTP fireshed is approximately 496,000 acres, covering multiple land ownerships. Areas of the Proposed Action and Alternatives outside the BRRTP fireshed were assessed and determined to pose a negligible risk for wildfire and fuel risks. The impact assessment within the fireshed focused on a quarter-mile distance on each side of the existing transmission line right-of ways (ROWs) or a Project Alternative ROW. This study corridor, otherwise known as the "borderzone," was used to evaluate potential Project impacts in relation to wildfire and fuels. Utilizing mile marker data for each route, the borderzone was delineated into half-mile linear segments along the route, allowing for half-mile by half-mile sections of the study corridor to be analyzed independently.

Field data, coupled with spatial historic wildfire/ignition data, existing transmission line data, existing wildfire condition data, and fire regime condition classification (FRCC) was utilized to assess wildfire- and fuels-related impacts through the results of the Risk Assessment modeling that was completed within the Wildfire and Fuels Technical Report, in Volume III of this Final EIS/EIR. The three wildfire risk assessment models were developed for the Project to address each of the listed significance criteria below. They were derived from the attributes and relationships utilized in the California Fire Plan and are specifically calibrated to the BRRTP. Risk Assessment model attributes, key, and data results are included within Appendix F of this Final EIS/EIR.

- Model 1: Firefighter Safety and Obstruction to Suppression quantifies the potential for the Project to compromise firefighter safety and create obstructions to fire suppression efforts.
- Model 2: Potential for Wildfire quantifies adverse effects to public safety through an increased risk of wildfire.
- Model 3: Native Vegetation Alteration quantifies the potential for native vegetation alteration due to the introduction of fire-prone weeds and attendant increase in the potential for wildfire.

The models were utilized to describe the existing wildfire risk conditions and potential wildfire risk conditions resulting from Project implementation within the borderzone area for each Alternative. The components of each model were the intersection or proximity of the borderzone with spatial data representing the fire-related attributes, allowing for a categorical index to describe the specific fire risk in the existing or proposed environment relative to each criterion. The wildfire risk assessment results for each model were translated into four risk categories—low, moderate, high, and very high—based on statistical distribution, and mapped. The three individual models were completed on both a pre-Project basis and with the implementation of the Project. As shown within the results of the risk assessment modeling, various levels of wildfire risk currently exist within the Project area. The results of both the pre-Project and Project level risk assessment results are presented below for each of the Alternatives.

Significance Criteria

Specific significance criteria has been developed for use in determining wildfire impact significance. Each criterion is used to evaluate the significance of each potential impact listed below. A significance analysis of each potential impact has been conducted within the BRRTP fireshed for the Proposed Action and Alternatives. The significance criteria are described as follows:

> *Criterion WF-1*: The presence of the Project, as well as construction and maintenance activities, may compromise firefighter safety and create obstructions to fire suppression efforts.
>
> *Criterion WF-2*: The Project construction and/or maintenance may adversely affect public safety through an increased risk of wildfire.
>
> *Criterion WF-3*: Activities associated with Project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire-prone weeds, and increase in potential for wildfire.

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Mitigation Planning

Mitigation measures are designed to reduce impacts associated with the Proposed Action and Alternatives. Specific mitigation measures are recommended when it is determined that Project design and/or GPs would not fully mitigate an impact. The analysis determined that specific mitigation measures are available and would be beneficial in reducing potential impacts associated with the Project. Activities associated with the implementation of these mitigation measures, including vegetation clearing, would require the implementation of all other appropriate Project mitigation measures, including biological resource mitigation measures.

TABLE 4.2.11-1. WILDFIRE AND FUELS MITIGATION MEASURES

Mitigation Measure	Description
F-1a	**Eliminate Transmission Line Bounded Islands.** LADWP shall eliminate the transmission line bounded islands, as feasible within the limits of standard transmission line design, that would be created by the proposed transmission line along Alternative 1, Alternative 2, and Alternative 2a where the new line departs and remerges with the existing transmission line corridors. Specifically, this would apply to Alternative 1 between mile markers 52.2 and 52.7 and 55.2 and 55.7; Alternative 2 between mile markers 55.0 and 55.7; and Alternative 2a between mile markers 55.0 and 55.6.
F-1b	**Remove the Potential for Wooden Pole Contact.** Within the limits of standard transmission line design, the Project should be constructed to avoid potential conflict of existing wooden poles from either conductor contact or from the placement of the new transmission structures. If avoidance of the wooden poles is not possible through design of the Project, then LADWP would coordinate with the responsible utility to rebuild as steel poles or relocate the wooden poles to meet standard avoidance practice. Potential wooden pole contact exists along Alternative 1 between mile markers 52.2 and 53.4, Alternative 2 between mile markers 52.7 and 54.7, Alternative 2a between mile markers 52.7 and 54.7, Alternative 3 between mile markers 41.0 and 53.9, and along the reconductoring of the existing BR-RIN 230 kV transmission line in the same mile marker locations of the new line listed above under Alternative 2.
F-1c	**Share Costs for ANF Fuel Break Maintenance Programs.** LADWP shall enter into a cost-sharing agreement with the USFS for maintenance of existing backbone fuelbreaks within the ANF that are close (within 0.25 mile of the proposed centerline) to the Project or that transect one of the Alternatives. A backbone fuelbreak is an identified key ridge or other linear geographical feature that has a high level of effectiveness in slowing or containing a wildfire. LADWP's responsibility under the cost-sharing agreement would be established through coordination between LADWP and USFS. Responsibility would be proportional to the Project's potential impacts on wildfire prevention and suppression. The fuelbreaks program between USFS and LADWP shall be finalized before transmission line energization.
F-1d	**Provide Transmission Line Safety Training to Regional Fire Prevention Agency Staff.** LADWP and fire prevention agencies shall coordinate to provide transmission line bi-lateral/cooperative fire safety training to regional fire prevention agency staff before the start of the official fire season following construction of the Project. LADWP and the agencies will coordinate and mutually decide if additional training is needed in subsequent years, and on the duration, content and most productive methods to conduct the bi-lateral training. A key element of this bi-lateral/cooperative training mitigation is to allow for the exchange of BRRTP-specific construction, maintenance and operation activities planned for the coming year, as well as to update both Utility and Fire Agency emergency fire reporting and fire suppression coordination procedures.

Mitigation Measure	Description
F-1e	**Coordinate During Emergency Fire Suppression Activities.** In the event of a fire within the Project area, LADWP would coordinate construction activities with fire agencies to avoid obstructions to firefighting activities. The following provisions shall be defined based on consultation with fire agencies. Onsite LADWP and contracted personnel shall coordinate fire suppression activities through the active Fire Incident Commander, and emergency ingress and egress to construction-related access roads shall remain unobstructed at all times during active firefighting activities. Construction in the work area shall cease in the event of a fire within 1,000 feet of the work area or a distance deemed to be unsafe for construction crews. The work area includes the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. LADWP shall contact cooperating fire agency dispatches seven days before helicopter use and shall provide dispatch centers with radio frequencies being used by the aircraft, aircraft identifiers, the number of helicopters that would be used while working on or near CAL FIRE Contract County and ANF lands at any given time, and the flight pattern of helicopters to be used. Should a wildfire occur within five (5) miles of the work area, if instructed by the Incident Commander and/or Forest Aviation Officer, construction-related helicopters in use by LADWP shall immediately cease construction activities and not restart aerial operations until authorized by the appropriate fire agency.
F-1f	**Implement FAA/USFS Review for the Appropriate Installation of Aerial Warning Signage and/or Lighting per FAA "Advisory AC70-7460 – Obstruction Marking and Lighting."** Before approval of final Project design, LADWP shall consult with the FAA in regards to Aerial Warning Signage and/or lighting per FAA "Advisory AC70-7460 – Obstructions Marking and Lighting" dated Feb. 1, 2007. Following FAA coordination, LADWP would contact Aerial Fire Suppression agencies for updates related to the location and final design of the transmission line, including tower heights and any warning signage and/or lighting required by the FAA.
F-2a	**Develop and Implement a Construction and Maintenance Fire Prevention Plan.** LADWP shall coordinate, develop and implement a Fire Prevention and Vegetation Management Plan, which may be incorporated into the overall COM Plan, to cover construction and maintenance activities associated with the Project. The Plan would include monitoring activities during construction to ensure implementation and effectiveness of the Plan. The Plan would be applicable to the entirety of the Proposed Action or Alternative during all construction and maintenance activities. The Plan will be developed in coordination with USFS and BLM, with input from the CAL FIRE Contract County. The plan will be approved by the Forest Service and BLM prior the start of any construction activities. At a minimum, Plan contents shall include the requirements of ANF Fire Management Plan and Title 14 of the California Code of Regulations, Article 8 #918 "Fire Protection." Based on these requirements, the plan will include procedures for reporting fires, minimum fire suppression equipment requirements, communication, construction restrictions based on fire conditions, fire patrols, and fire suppression water supplies.
F-2b	**Cease Work During Red Flag Conditions.** During Red Flag Warning events, as issued daily by the National Weather Service and the Los Angeles County Fire Department in Federal Responsibility Areas (FRAs) and Local Responsibility Areas (LRAs), all non-emergency construction and maintenance activities shall cease in affected areas. An exception shall be made for transmission line testing where a transmission line may be tested if the loss of another transmission facility could lead to system instability or cascading outages.
F-2c	**Remove Hazards from the Work Areas.** Before starting construction and/or maintenance work on the Project, LADWP shall clear or remove brush and dead and decaying vegetation that would pose a fire hazard from the work area. The work area includes the transmission ROW, construction laydown areas, pull sites, access roads, parking pads, remote helicopter construction sites, helicopter fueling/maintenance sites and any other sites adjacent to the ROW where personnel are active or where equipment is in use or stored. For ground-based construction, cleared vegetation may either be removed or chipped and spread onsite in piles no higher than six (6) inches.

Mitigation Measure	Description
F-3a	**Fire Prevention On Private Property.** The BRRTP fireshed assessment area comprises 55% non-federal ownership that includes many homes, businesses, and other structures associated with these communities. Active fire prevention practices by home- and land-owners would mitigate and decrease the potential for loss of private property, including homes, in the event of a wildfire. Fire prevention practices primarily include creation of defensible space around structures (compliance with Public Resources Code 4291) but can also include retrofitting rooftops with fire-proof materials, fire shutters, double pan windows, eave boxing, removal of attic vents, automatic or remotely operated water sprinklers and automatic or remotely operated, generator-supported water systems, and removal or replacement of wood fencing and decks with fire-resistant materials. There are various existing programs at the federal, state, and local level that are available to individual land owners and communities for education and funding for specific wildfire prevention measures. These programs and grants are available through the National Fire Protection Association's (NFPA) Firewise Communities, the National Fire Plan, FEMA Region IX, the California Fire Safe Council, and locally with the Angeles Forest Valleys and Lakes Fire Safe Council, as well as numerous private foundations. The responsibility to implement and maintain these fire prevention measures as part of this mitigation measure on private property lies with the individual land/home owner. State and Local fire agencies have enforcement authority for state and local code requirements.

Three-Circuit Tower Mitigation

A three-circuit lattice tower design would be implemented as described in Chapter 2, Section 2.2.4, at the locations shown in Figure 2-17, Three-Circuit Tower Mitigation Map. This mitigation measure would be implemented on a Project-wide basis and substantially lessen the potential wildfire impacts that would occur as a result of the original design and centerline location for the proposed new double-circuit 230 kV transmission line component of each Alternative. Although this structure type would increase the height of the existing lattice structures within the LADWP ROW, it would allow for the Project to be constructed entirely within the existing ROW with no expansion or creation of "transmission line bounded islanded." These "islands" would have created indefensible space for firefighters within the Green Valley area of the ANF.

Helicopter Mitigation

Helicopter Mitigation shall be implemented, as described in Chapter 2, Section 2.2.3, in steep areas of the ANF where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 2-22, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 2-22, including Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP. The implementation of this mitigation measure would reduce the amount of access roads constructed and maintained for the Project. This mitigation measure would be implemented on a Project-wide basis and was incorporated into the impact analysis as part of the Project.

Summary of Impact Analysis Results

This section delineates and concludes the potential impacts and mitigations related to wildfire prevention and suppression for the Project and Alternatives. The identified impacts are based on the change between expected interaction between the biophysical characteristics of the BRRTP affected area and the design specifications, construction activities, maintenance activities, and operational expectations of the existing conditions and those of the Proposed Action and Alternatives. There are three wildfire and fuels impacts that were identified as part of the fireshed assessment. These are described as follows:

> *Impact F-1*: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.
>
> *Impact F-2*: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.
>
> *Impact F-3*: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

Impact conclusions summarize the results and applicable mitigations. The discussion and conclusion for each identified impact determined for the Proposed Action and each considered Alternative are presented below.

No Project Alternative

The No Project Alternative is evaluated for wildfire and fuels by weighing it against the significance criteria.

Under the No Action Alternative, construction and operation of the project would not occur. As such, a No Action Alternative would not result in any additional risks to public safety beyond what currently exists within the entire Project area, which includes the presence of existing transmission lines that require periodic maintenance and inspection. In addition, high fuels and extreme fire weather threats, which lend to an existing risk of wildfire, also exist within the Project area. Therefore, public safety risks due to wildfire and firefighter safety and ability to fight fires would remain the same if the No Action Alternative is chosen.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

The new circuit between Haskell Canyon and Castaic Power Plant would be entirely within the BRRTP fireshed. As opposed to reconductoring of the BR-RIN transmission line (discussed below), the addition of the new 230 kV circuit would only include stringing activities from the proposed Haskell Canyon Switching Station to the existing Castaic Power Plant within the existing LADWP ROW. Impacts resulting from the stringing activities would be nearly identical to the reconductoring, but would be less severe because the new circuit would only involve stringing activities as opposed to construction or reconstruction of existing transmission towers. Operational impacts from periodic ground or aerial inspections would also not change from the ongoing operation of the existing transmission lines within this corridor.

Reconductoring of BR-RIN Transmission Line

Forty-three miles of the reconductoring would occur within the BRRTP fireshed assessment area. Reconductoring of the existing BR-RIN would require many of the same activities of the new transmission line (surveying of ROW, rehabilitation of existing access and spur roads, clearing of ROW, conductor installation, ground rod installation, and cleanup). A portion of the existing transmission line structures would potentially need to be modified or replaced and/or foundations reinforced to carry the additional weight of the new and heavier conductor. All work would be done primarily within the ROW except where access would be necessary from outside of the ROW or where laydown areas would be constructed for storage of construction materials for the reconductoring effort and construction of the new double-circuit transmission line. Transmission line structure removal and replacement construction would occur within the existing ROW, in which some areas are presently considered to have a moderate to very high sensitivity to fire susceptibility, but would result in minor impacts due to the construction of the Project resulting in a long-term condition unchanged from the current condition.

New Haskell Canyon Switching Station

The proposed Haskell Canyon Switching Station would be on LADWP-owned property at the convergence of several existing and proposed 230 kV transmission lines (the existing BR-RIN, the proposed double-circuit Barren Ridge-Haskell Canyon, existing Castaic-Northridge, Castaic-Sylmar, Castaic-Olive, and the proposed Castaic to Haskell Canyon). The proposed site for the Haskell Canyon Switching Station is comprised of 100% LADWP ownership. The Proposed Haskell Switching Station is within State Fire Suppression Responsibility Area. Construction and operation of the station would result in minor impacts related to wildfire ignition and to suppression efforts from the construction and operation of the Project. Access from nearby roadways would be improved by the construction of the switching station, resulting in better access for firefighting vehicles and equipment.

Expansion of the Barren Ridge Switching Station

The Barren Ridge Switching Station is in Kern County, outside of the BRRTP fireshed and the study area for wildfire hazards. As previously discussed, areas of the Proposed Action and Alternatives outside the BRRTP fireshed were assessed and determined to pose a negligible risk for wildfire and fuel risks.

New 230 kV Double-Circuit Transmission Line

Impact F-1: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.

The evaluation of this impact is based on Criterion WF-1 and the results from Risk Assessment Model 1.

> *The presence of the Project, as well as construction and maintenance activities, may create obstructions to fire suppression efforts.*

New obstructions to firefighting suppression efforts and risks to firefighter safety would be introduced into the BRRTP fireshed with the addition of Alternative 1. Existing conditions contain 3.5 miles of potential wooden pole contact with the proposed transmission line. These areas could also decrease firefighter suppression activities by creating an additional safety hazard during firefighting activities. About 14.5 miles of the existing transmission lines that Alternative 1 would parallel form transmission bounded islands, which create a considerable obstruction for fire suppression efforts and create an area that poses a threat to firefighter safety. Results from the risk assessment Model 1 are presented below in Table 4.2.11-2.

TABLE 4.2.11-2. ALTERNATIVE 1 MODEL 1 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	7 miles	9.5 miles	9 miles	7 miles
Project Condition	0 miles	5 miles	17.5 miles	10 miles

Under Project conditions, the majority of the route would result in high and very high risk of safety hazard for firefighters and reduction of the effectiveness of firefighting. Specifically, the Alternative would result in an increase of 8.5 and three miles of the high and very high risk assessment categories, respectively, from existing condition to Project condition. The majority of the increase in the high category occurs between borderzone segments 1 and 14 as a result of the increase in ROW widths and the presence of a transmission line where one does not currently exist. The increase in the very high category occurs at borderzone segments 20, 23, 26, 33, 40, and 47 as a result of the increase in ROW widths and the presence of a transmission line where one does not currently exist. Alternative 1 would include about 28 miles of new transmission line adjacent to one or more existing transmission lines. The incremental increase in parallel ROWs creates an obstruction of fire suppression efforts. Alternative 1 would include about 4.5 miles of new transmission line that does not parallel an existing facility; a new line that does not parallel an existing facility poses the greatest impact to fire suppression efforts and risk to firefighter safety because a new line is present where there was no previous obstruction.

Additionally, the Alternative introduces about 1.5 miles of new transmission bounded islands, which severely limits access to areas during a wildfire event and poses a risk to fire fighter safety. Alternative 1 also introduces about eight miles of increased transmission line height adjacent to existing facilities, posing an obstruction to aerial firefighting suppression efforts and increasing risk to firefighter safety. This attribute was quantified with respect to an incremental increase adjacent to existing facilities or the introduction of a new transmission line that does not parallel any existing facilities.

Approximately four miles of Alternative 1 would require new road construction, which would increase access for firefighting suppression efforts.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-1 and 4.2.11-2 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 1 borderzone associated with Significance Criterion WF-1 derived from the modeling.

Seven miles of Alternative 1 are proposed with Helicopter Mitigation. Most of the Helicopter Mitigation would be in steep terrain with very limited ground vehicle access. Helicopter Mitigation and/or maintenance practices in these remote regions of the ANF would introduce additional wildfire risk elements. Wildfire risk elements, such as heavy fuel loads, steep terrain, helicopter fueling sites, delays in initial attack response for a fire ignition, aerial contact with parallel transmission during construction and restricted suppression working space at the remote work sites, must be managed throughout the life of the Project.

CEQA Significance

Mitigation measures F-1a, F-1b, F-1d, F-1e, F-1f, and F-2a are recommended to reduce adverse impacts associated with the construction and maintenance activities of the transmission line as well as the presence of the transmission line during operation. F-1a would remove, to the extent practicable, transmission line bounded islands that would potentially prevent fire suppression activities. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1d, F-1e, and F-2a would ensure proper planning and communication between Project-related construction and operation activities with firefighting activities. F-1f would ensure that proper FAA signage or lighting requirements would be met during final design of the transmission line. With the implementation of these mitigation measures, Impact F-1 would be reduced to a less than significant level.

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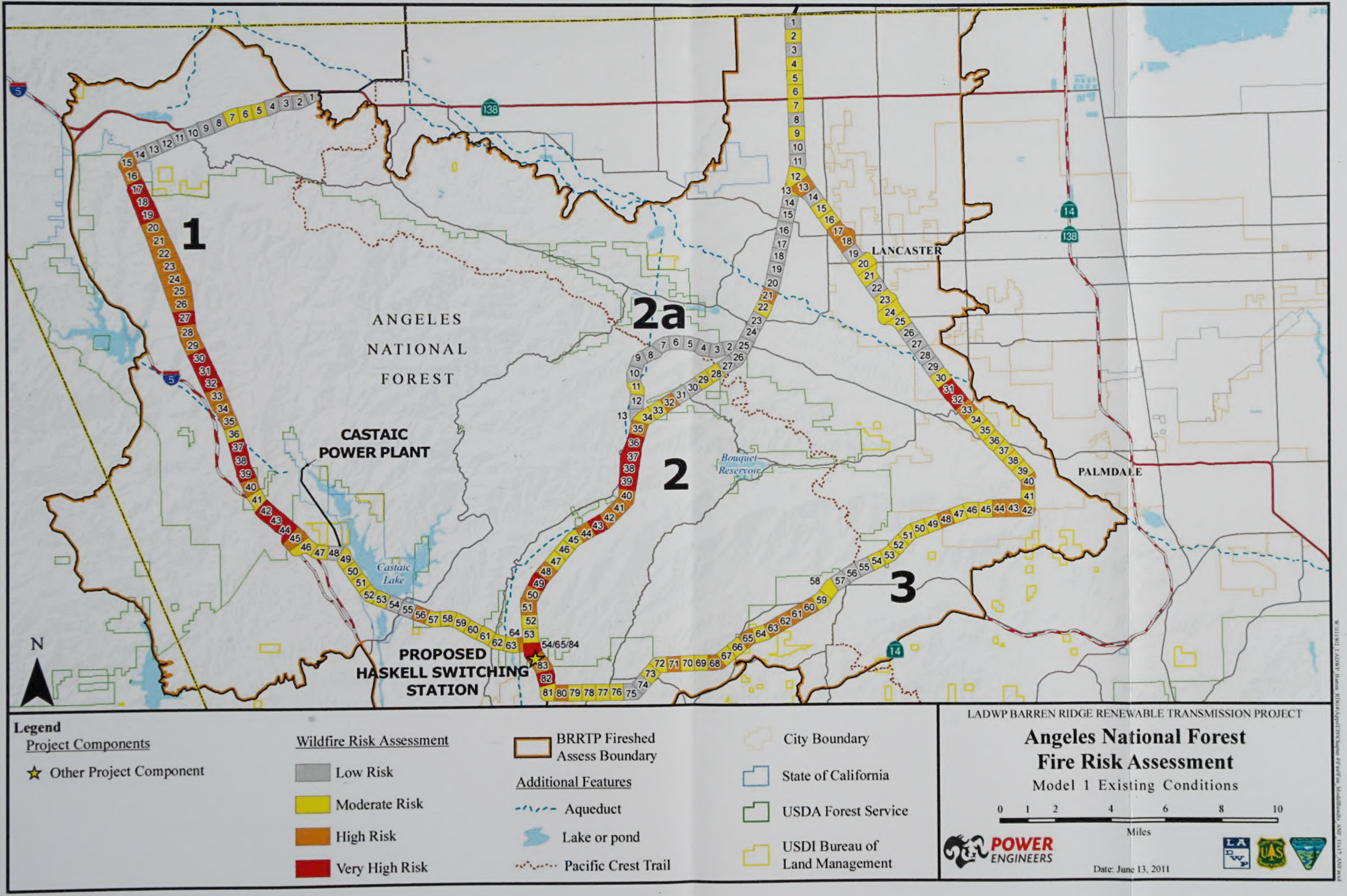
FIGURE 4.2.11-1. **MODEL 1 RESULTS FOR ALL ALTERNATIVES: EXISTING CONDITIONS**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Project Components
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Wildfire Risk Assessment
Low Risk
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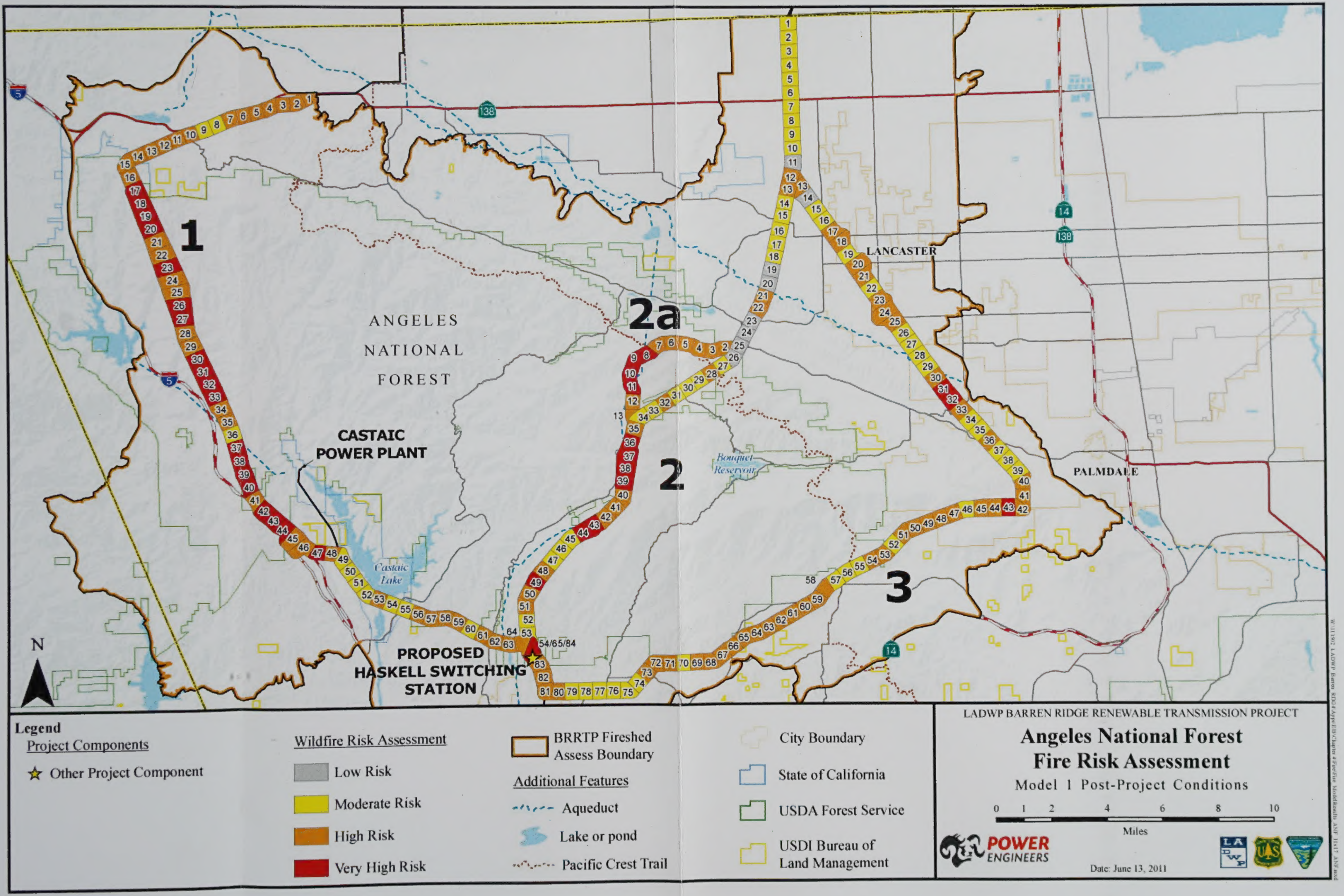
High Risk
Very High Risk
BRRTP Fireshed Assess Boundary
Additional Features
Aqueduct
Lake or pond
Pacific Crest Trail
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest
Fire Risk Assessment
Model 1 Existing Conditions
0 1 2 4 6 8 10
Miles
POWER ENGINEERS
Date: June 13, 2011

FIGURE 4.2.11-2. MODEL 1 RESULTS FOR ALL ALTERNATIVES: POST-PROJECT CONDITIONS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Project Components
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Wildfire Risk Assessment
Low Risk
Moderate Risk
High Risk
Very High Risk
BRRTP Fireshed Assess Boundary
Additional Features
Aqueduct
Lake or pond
Pacific Crest Trail
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest Fire Risk Assessment
Model 1 Post-Project Conditions
0 1 2 4 6 8 10
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POWER ENGINEERS
Date: June 13, 2011

Impact F-2: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.

The evaluation of this impact is based on Criterion WF-2 and the results from Risk Assessment Model 2.

> *The Project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.*

As described by Model 2 results, new risks to public safety through an increased risk of wildfire would be introduced into the BRRTP fireshed as a result of Alternative 1. Existing conditions along this Alternative contain 23.5 miles that would intersect an historic fire event that occurred within the last 50 years; about 12.5 miles of the route have had more than one fire event in the last 50 years. Those areas in the Barren Ridge fireshed in which a fire has previously occurred have a greater potential of experiencing another wildfire event and may adversely affect public safety through an increased risk of wildfire (see the Wildfire and Fuels Technical Report). Historic locations of fire ignition have the greatest potential to burn due to their proximity to the ignition source; about 15.5 miles of Alternative 1 intersect a historic ignition point. Assets at risk including homes, businesses, and infrastructure are also a key component when considering public safety during a wildfire event, as these are often the most important factor in developing a plan to fight a wildfire and ensure public safety. Approximately eight miles of Alternative 1 include at least one asset at risk. Results from the risk assessment Model 2 are presented below in Table 4.2.11-3.

TABLE 4.2.11-3. ALTERNATIVE 1 MODEL 2 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	6.5 miles	11.5 miles	10 miles	4.5 miles
Project Condition	0.5 mile	7.5 miles	16.5 miles	8 miles

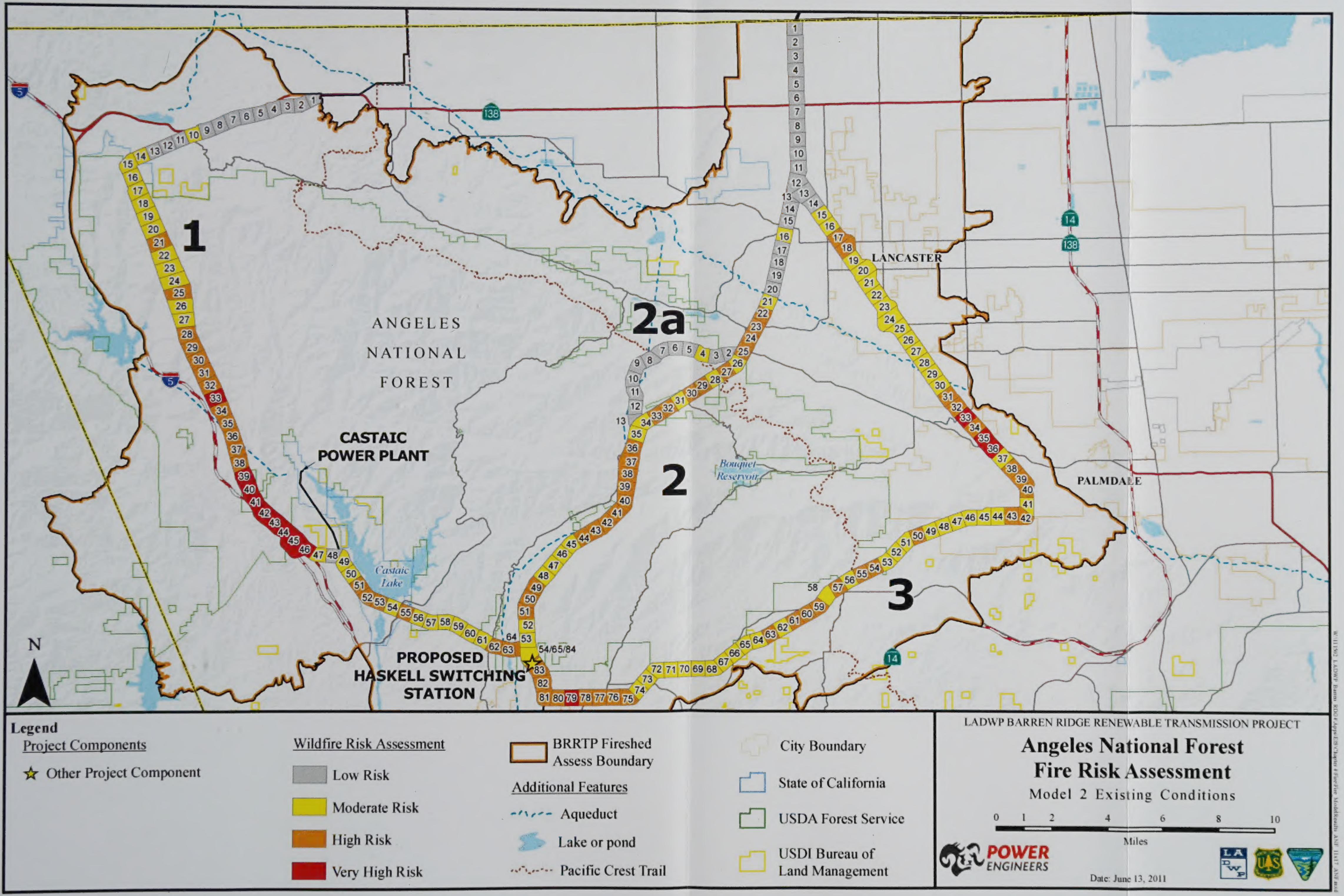
Under Project Conditions, the majority of the route would have high and very high risk of wildfire event. Specifically, the Alternative would result in an increase of 6.5 and 3.5 miles of the high and very high risk assessment categories, respectively, from existing condition to Project condition. The majority of the increase in the high category occurs within the northwest area of the ANF between borderzone segments 15 and 26, and south of Castaic Lake between segments 54 and 61 as a result of the increase in the number of parallel transmission line ROWs. The increase in the very high category also occurs as a result of the increase in the number of parallel transmission line ROWs. Project conditions exhibit an increased wildfire risk because Project-induced attributes are compiled with the risk posed by the existing conditions. Alternative 1 would include about 28 miles of new transmission line adjacent to one or more existing transmission lines. The presence of a transmission line mainly increases the potential for wildfire events, which can adversely affect public safety due to the potential of wildfire ignitions from the transmission line and the ignition potential from maintenance activities or non-transmission related use of access roads. Areas where a new transmission line is introduced that does not parallel an existing transmission line corridor exhibit an increased adverse affect on public safety through an increased risk of wildfire, because of the introduction of access to a new area, increasing ignition potential to an area where previously only lightning ignitions could occur. Areas where the proposed transmission line would not parallel an existing facility would also increase the potential for public access into previously inaccessible areas, which could increase safety risk during a wildfire event. Transmission facilities not paralleling existing lines would occur for about 4.5 miles of Alternative 1. Finally, new roads would be required for about four miles of the construction of Alternative 1 and would increase the risk of wildfire, as they provide greater access to areas near the route, increasing the potential for ignitions and public risk during a wildfire event.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-3 and 4.2.11-4 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 1 borderzone associated with Significance Criterion WF-2 derived from the modeling.

CEQA Significance

Mitigation measures F-1b, F-1c, F-1d, F-1e, F-2a, F-2b, F-2c, and F-3a are recommended to reduce adverse impacts associated with the increased risk of wildfire. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1c, F-1d, F-1e, F-2a, and F-2b would ensure proper funding, planning and communication between Project-related construction and operation activities with firefighting activities, including the maintenance of important firebreaks on the ANF. F-2c would remove potential hazards from work areas that could pose a fire hazard. F-3a identifies potential funding sources for fire prevention measures on private property. With the implementation of these mitigation measures, Impact F-2 would be reduced to a less than significant level.

FIGURE 4.2.11-3. MODEL 2 RESULTS FOR ALL ALTERNATIVES: EXISTING CONDITIONS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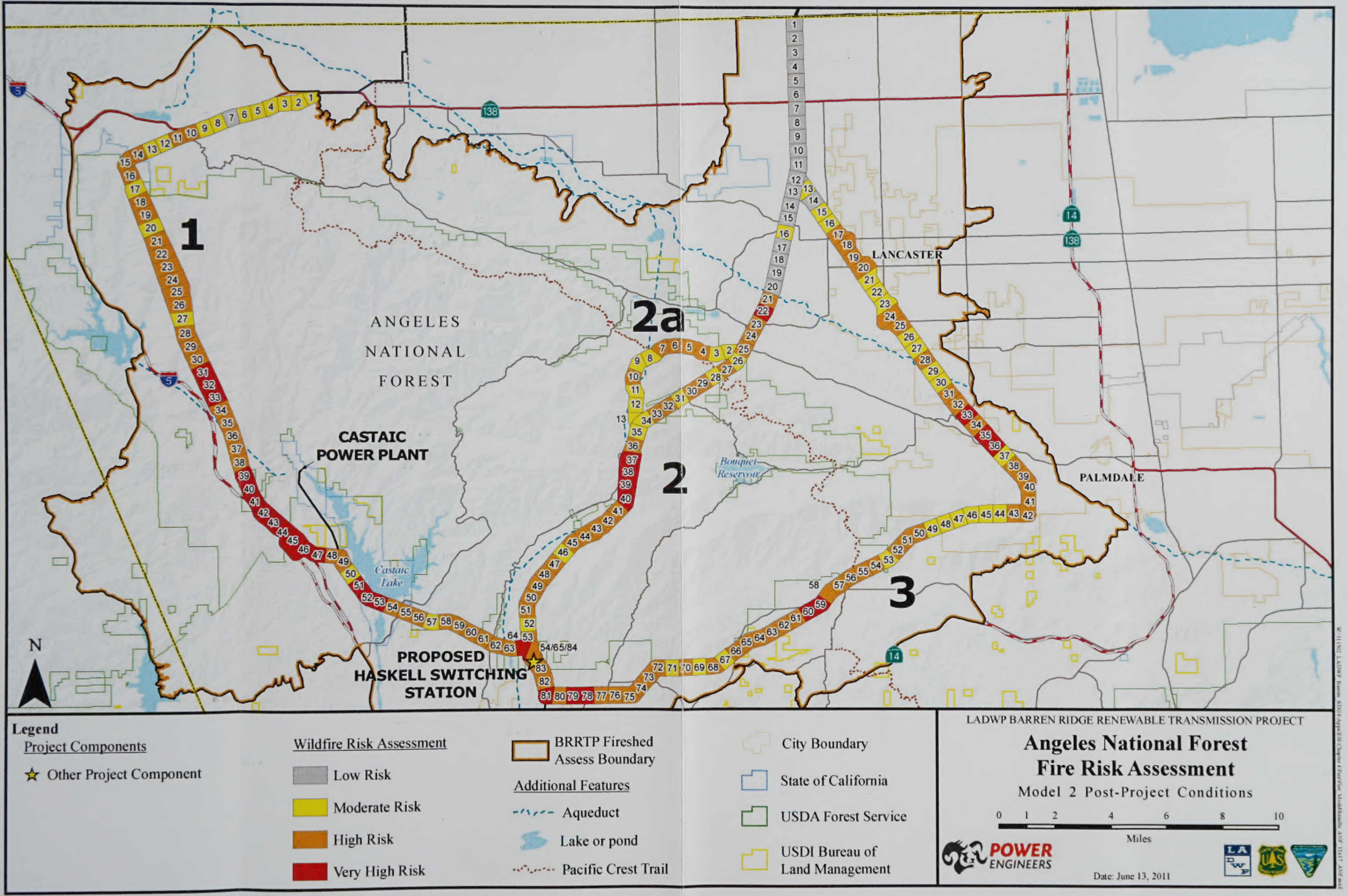
Project Components
☆ Other Project Component
Wildfire Risk Assessment
Low Risk
Moderate Risk
High Risk
Very High Risk
BRRTP Fireshed Assess Boundary
Additional Features
Aqueduct
Lake or pond
Pacific Crest Trail
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest
Fire Risk Assessment
Model 2 Existing Conditions
0 1 2 4 6 8 10
Miles
POWER ENGINEERS
Date: June 13, 2011

FIGURE 4.2.11-4. MODEL 2 RESULTS FOR ALL ALTERNATIVES: POST-PROJECT CONDITIONS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Project Components
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Wildfire Risk Assessment
Low Risk
Moderate Risk
High Risk
Very High Risk
BRRTP Fireshed Assess Boundary
Additional Features
Aqueduct
Lake or pond
Pacific Crest Trail
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest
Fire Risk Assessment
Model 2 Post-Project Conditions
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Miles
POWER ENGINEERS
Date: June 13, 2011

Impact F-3: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

The evaluation of this impact is based on Criterion WF-3 and the results from Risk Assessment Model 3.

> *Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.*

As described by Model 3 results, new risks to native vegetation alteration would be introduced into the BRRTP fireshed as a result of Alternative 1. Existing conditions of the vegetation of the borderzones along Alternative 1 exhibit considerable fire-related characteristics. The Scott and Burgan Fuel Ranking applied to the model identifies the areas where fuels would encourage the quickest spread of wildfire; about 20 miles of Alternative 1 are ranked "High" for this attribute. The FRAP Fire Regime and Condition Class Data (2003) indicates canopy density of the existing vegetation, fire regime in relation to its historical range, and frequency of historical fire events. Where there is a greater frequency of fire events, there is greater potential for the introduction of fire-prone weeds and subsequent wildfire. About six miles of Alternative 1 borderzones are ranked high in terms of their fire regime; 26 miles are ranked moderate. Results from the risk assessment Model 3 are presented below in Table 4.2.11-4.

TABLE 4.2.11-4. ALTERNATIVE 1 MODEL 3 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	1.5 miles	17.5 miles	8 miles	5.5 miles
Project Condition	1.5 miles	12 miles	5.5 miles	13.5 miles

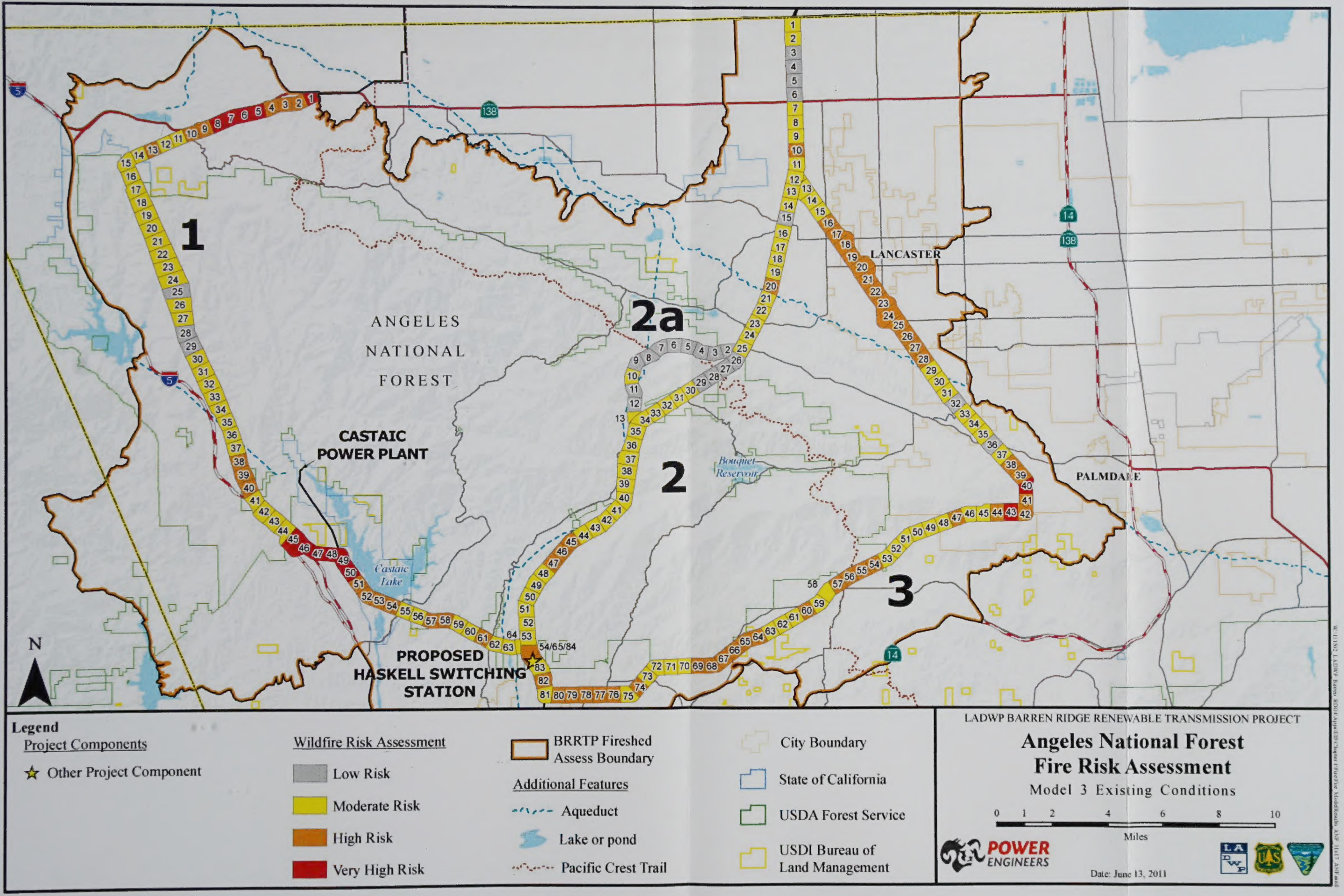
Under Project conditions, the moderate and high rankings decrease; however, the very high ranking increases by eight miles. The majority of the increase would occur in the northern portion of the BRRTP fireshed between borderzone segments 1 and 14 as a result of a new transmission line ROW where one does not currently exist. Approximately 28 miles of the Alternative would include an increase in parallel ROWs where Alternative 1 would include a new transmission line adjacent to one or more existing transmission lines. Approximately four miles of Alternative 1 would include a new transmission line that does not parallel an existing transmission line corridor. Portions where Alternative 1 is not adjacent to an existing transmission line corridor present a higher fire risk because these areas would not have been previously accessed for transmission line construction or maintenance. The presence of a new transmission line increases the risk for introduction of non-native plants species that may be more fire-prone than the existing plant species. Finally, new roads would be required for about four miles of the construction of Alternative 1 and would increase the risk of native vegetation alteration, as they provide greater access to areas near the Alternative.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-5 and 4.2.11-6 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 1 borderzone associated with Significance Criterion WF-3 derived from the modeling.

CEQA Significance

Biological mitigation measure BIO-2 (see Section 4.3.1) would reduce the adverse impacts of Impact F-3 to a less than significant level through the implementation of a weed management plan.

FIGURE 4.2.11-5. MODEL 3 RESULTS FOR ALL ALTERNATIVES: EXISTING CONDITIONS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Project Components
☆ Other Project Component
Wildfire Risk Assessment
Low Risk
Moderate Risk
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Very High Risk
BRRTP Fireshed Assess Boundary
Additional Features
Aqueduct
Lake or pond
Pacific Crest Trail
City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest
Fire Risk Assessment
Model 3 Existing Conditions
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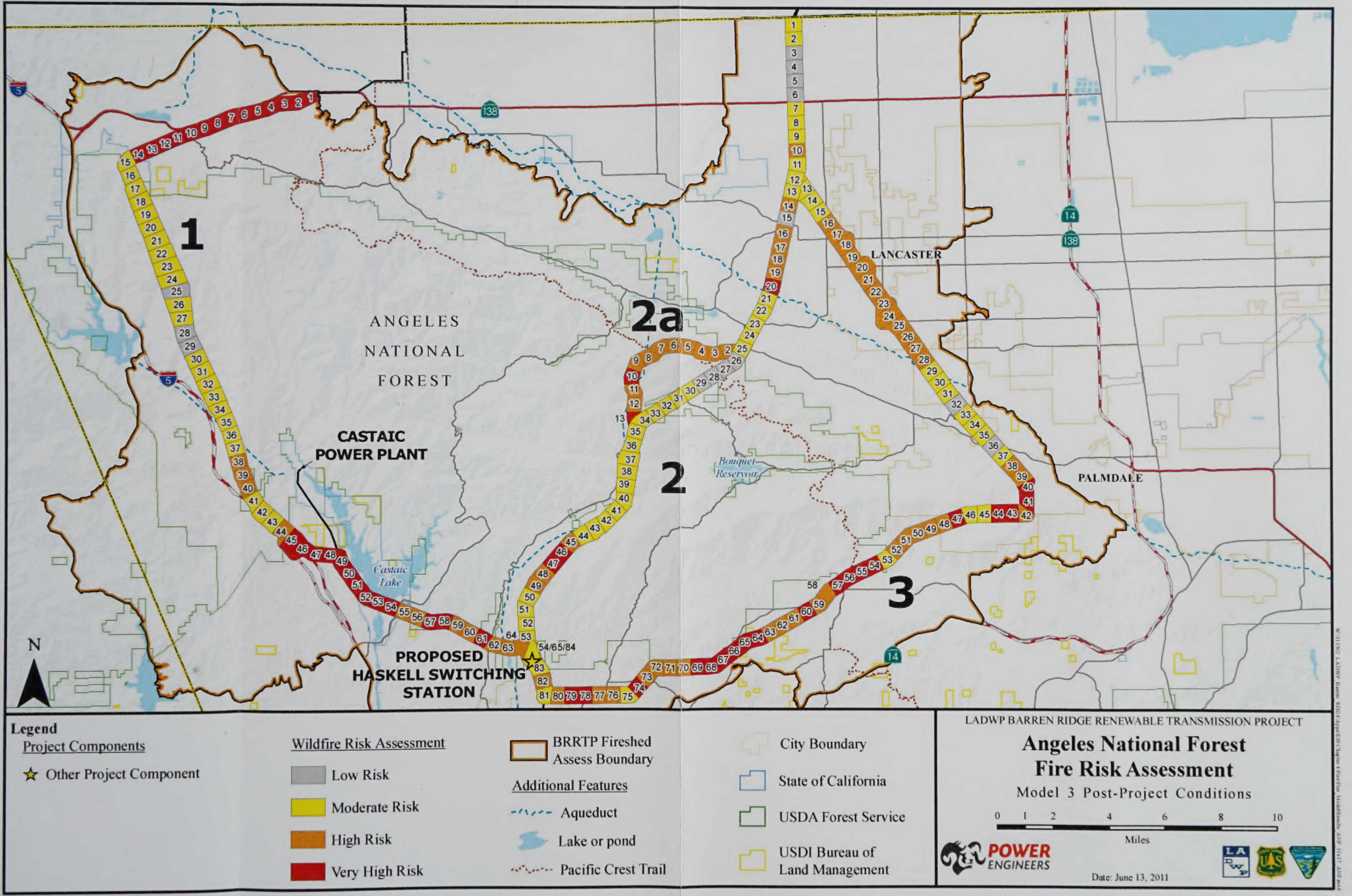
Miles
POWER ENGINEERS
Date: June 13, 2011

FIGURE 4.2.11-6. MODEL 3 RESULTS FOR ALL ALTERNATIVES: POST-PROJECT CONDITIONS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Wildfire Risk Assessment
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BRRTP Fireshed Assess Boundary
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City Boundary
State of California
USDA Forest Service
USDI Bureau of Land Management
LADWP BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
Angeles National Forest
Fire Risk Assessment
Model 3 Post-Project Conditions
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POWER ENGINEERS
Date: June 13, 2011

Alternative 2

Impact F-1: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.

The evaluation of this impact is based on Criterion WF-1 and the results from Risk Assessment Model 1.

> *The presence of the Project, as well as construction and maintenance activities, may create obstructions to fire suppression efforts.*

New obstructions to firefighting suppression efforts and risks to firefighter safety would be introduced into the BRRTP fireshed with the addition of Alternative 2. Existing conditions exhibit about 2.5 miles of existing wooden pole contact, which creates the potential for the Proposed Action to be struck by a wooden pole. These areas could decrease firefighter suppression activities by creating an additional safety hazard during firefighting activities. Additionally, about 6.5 miles of the existing transmission lines to which the Proposed Action would be parallel form transmission bounded islands, which create a considerable obstruction for fire suppression efforts and create an area that poses a threat to firefighter safety. Results from the risk assessment Model 1 are presented below in Table 4.2.11-5.

TABLE 4.2.11-5. ALTERNATIVE 2 MODEL 1 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	9.5 miles	9 miles	5 miles	3.5 miles
Project Condition	3.5 miles	13 miles	6.5 miles	4 miles

Under Project Conditions, the majority of the route would result in moderate and high risk of safety hazard for firefighters and reduction of the effectiveness of firefighting. Specifically, the Alternative would result in an increase of five and 1.5 miles of the moderate and high risk assessment categories, respectively, from existing condition to Project condition. There would be an increase of 0.5 mile of the very high risk assessment category. The majority of the increase in the moderate category occurs between borderzone segments 1 and 18 as a result of the increase in ROW widths from an additional transmission line paralleling the existing transmission lines within the utility corridor. The increase in the high category is also a result of an increase in the ROW widths that occurs in areas outside of the three-circuit mitigation segments. The Proposed Action would include about 19 miles of new transmission line adjacent to one or more existing transmission lines. The incremental increase in parallel ROWs creates an obstruction of fire suppression efforts, but is not as considerable where there are no existing transmission lines. The Proposed Action would parallel existing transmission lines for its entire alignment. The Proposed Action includes about 8.5 miles of reconductoring of existing towers, resulting in a line height increase adjacent to existing facilities, but no expansion in the number of parallel ROWs of transmission lines between segments 23 and 36 (see discussion below regarding Three-circuit Mitigation). The increase in line height adjacent to an existing line would pose an obstruction and safety risk to firefighting, especially to aerial suppression efforts as described above.

Additionally, the Proposed Action introduces only about one mile of new transmission bounded island, which severely limits access to areas during a wildfire event and poses a risk to fire fighter safety.

Approximately one mile of the Proposed Action would require new road construction, which would increase access for firefighting suppression efforts.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-1 and 4.2.11-2 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2 borderzone associated with Significance Criterion WF-1 derived from the modeling.

Three-circuit Mitigation

The proposed three-circuit mitigation has been designed to reduce adverse Wildfire/Fuels impacts and minimize acquisition of private property due to the expansion of ROW for Alternative 2 (Proposed Action).

The proposed three-circuit mitigation eliminates the "Transmission Bounded Islands" as well as reduces the overall ROW width of the Proposed Action within the critical wildfire severity topology of Elizabeth Lake, Green Valley and the ANF. An additional fire hazard reduction benefit of reducing the additive ROW width of the Proposed Action is that, by co-locating the new and existing transmission lines onto the three-circuit towers, several distribution/service wooden pole contact points would also be eliminated, further lowering the Proposed Action's fire risk assessment.

The three-circuit mitigation would introduce additional wildfire suppression and ignition complexities. Three-circuit towers may be up to 80 feet taller than the existing structures they would replace. This is of critical aerial firefighting importance, as it presents a taller obstacle to be avoided where the transmission line crosses over exposed ridge lines that are very often used as tactical fire containment boundaries.

CEQA Significance

Mitigation measures F-1a, F-1b, F-1d, F-1e, F-1f, and F-2a are recommended to reduce adverse impacts associated with the construction and maintenance activities of the transmission line as well as the presence of the transmission line during operation. F-1a would remove, to the extent practicable, transmission line bounded islands that would potentially prevent fire suppression activities. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1d, F-1e, and F-2a would ensure proper planning and communication between Project-related construction and operation activities with firefighting activities. F-1f would ensure that proper FAA signage or lighting requirements would be met during final design of the transmission line. With the implementation of these mitigation measures, Impact F-1 would be reduced to a less than significant level.

Impact F-2: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.

The evaluation of this impact is based on Criterion WF-2 and the results from Risk Assessment Model 2.

> *The Project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.*

As described by Model 2 results, new risks to public safety through an increased risk of wildfire would be introduced into the BRRTP fireshed as a result of Alternative 2. Existing conditions along this Alternative include 18 miles of borderzone that intersect an historic fire event that occurred within the last 50 years; 11.5 miles have witnessed more than one fire event in the last 50 years. Those areas in which a fire has previously occurred have a greater potential of experiencing another wildfire event and may adversely affect public safety through an increased risk of wildfire. Historic locations of fire ignition also play an important role and jeopardize public safety because these are the areas that have the greatest potential to burn due to their proximity to the ignition source; about 16 miles of the Alternative intersect a historic ignition point. Assets at risk including homes, businesses, and infrastructure are also a key component when considering public safety during a wildfire event, as these are often the most important factor in developing a plan to fight a wildfire and ensure public safety. Approximately 7.5 miles of Alternative 2 include at least one asset at risk. Results from the risk assessment Model 2 are presented below in Table 4.2.11-6.

TABLE 4.2.11-6. ALTERNATIVE 2 MODEL 2 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	9.5 miles	7 miles	11 miles	0 miles
Project Condition	9.5 miles	4 miles	11.5 miles	2.5 miles

The Alternative would result in a decrease of three miles of moderate rating, while increases of 0.5 and 2.5 miles of the high and very high risk assessment categories, respectively, from existing condition to Project condition. The majority of the increase in the very high category occurs at borderzone segment 22 and between segments 37 and 40 as a result of the increase in the number of parallel transmission line ROWs. The Proposed Action would include about 19 miles of new transmission line adjacent to one or more existing transmission lines. The presence of a transmission line mainly increases the potential for wildfire events, which can adversely affect public safety due to the potential of wildfire ignitions from the transmission line and the ignition potential from maintenance activities or non-transmission related use of access roads. The Proposed Action's new 230 kV double-circuit transmission line would parallel an existing transmission line corridor for its entire alignment. Finally, new roads would be required for about one mile of the construction of the Proposed Action and increase the risk of wildfire, as they provide greater access to areas near the Alternative, increasing the potential for accidental or intentional ignitions or the risk for public who may be in these areas during a wildfire event.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-3 and 4.2.11-4 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2 borderzone associated with Significance Criterion WF-2 derived from the modeling.

CEQA Significance

Mitigation measures F-1b, F-1c, F-1d, F-1e, F-2a, F-2b, F-2c, and F-3a are recommended to reduce adverse impacts associated with the increased risk of wildfire. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1c, F-1d, F-1e, F-2a, and F-2b would ensure proper funding, planning and communication between Project-related construction and operation activities with firefighting activities, including the maintenance of important firebreaks on the ANF. F-2c would remove potential hazards from work areas that could pose a fire hazard. F-3a identifies potential funding sources for fire prevention measures on private property. With the implementation of these mitigation measures, Impact F-2 would be reduced to a less than significant level.

Impact F-3: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

The evaluation of this impact is based on Criterion WF-3 and the results from Risk Assessment Model 3.

> *Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.*

As described by Model 3 results, new risks to native vegetation alteration would be introduced into the BRRTP fireshed as a result of Alternative 2. Existing conditions of the vegetation of the borderzones along Alternative 2 exhibit considerable fire-related characteristics. The Scott and Burgan Fuel Ranking applied to the model identifies the areas where fuels would encourage the quickest spread of wildfire; about 16 miles of Alternative 2 are ranked "High" for this attribute. The FRAP Fire Regime and Condition Class Data (2003) indicates canopy density of the existing vegetation, fire regime in relation to its historical range, and frequency of historical fire events. Where there is a greater frequency of fire events, there is greater potential for the introduction of fire-prone weeds and subsequent wildfire. About one mile of Alternative 2 borderzones is ranked high in terms of its fire regime; 20.5 miles are ranked moderate. One borderzone segment, one half mile, of the Alternative was eliminated from Model 3 because it is nearly all agricultural and not subject to vegetation analysis. Results from the risk assessment Model 3 are presented below in Table 4.2.11-7.

TABLE 4.2.11-7. ALTERNATIVE 2 MODEL 3 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	4 miles	19.5 miles	2.5 miles	1 miles
Project Condition	4 miles	16 miles	5.5 miles	1.5 miles

Under Project conditions, the moderate rankings decrease; however, the high and very high rankings increase by three and 0.5 miles, respectively. The majority of the increase would occur in the northern portion of the BRRTP fireshed in the Antelope Valley between borderzone segments 14 and 20 as a result of the increase in parallel ROWs where Alternative 2 would include a new transmission line adjacent to existing transmission lines, which would occur for about 19 miles of the Proposed Action. The presence of a new transmission line increases the risk for introduction of non-native plants species that may be more fire-prone than the existing plant species. All portions of the Proposed Action would parallel an existing transmission line except for 8.5 miles of reconductoring, which effectively exhibits no change between existing conditions and Project conditions for Criterion 3 as described above. Finally, new roads would be required for about one mile of the construction of the Proposed Action and would increase the risk of native vegetation alteration, as they provide greater access to areas near the alternative.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-5 and 4.2.11-6 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2 borderzone associated with Significance Criterion WF-3 derived from the modeling.

CEQA Significance

Biological mitigation measure BIO-2 (see Section 4.3.1) would reduce the adverse impacts of Impact F-3 to a less than significant level through the implementation of a weed management plan.

Alternative 2a

Impact F-1: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.

The evaluation of this impact is based on Criterion WF-1 and the results from Risk Assessment Model 1.

> *The presence of the Project, as well as construction and maintenance activities, may create obstructions to fire suppression efforts.*

New obstructions to firefighting suppression efforts and risks to firefighter safety would be introduced into the BRRTP fireshed with the addition of Alternative 2a. Existing conditions exhibit about 2.5 miles of existing wooden pole contact, which creates the potential for the Alternative to be struck by a wooden pole. These areas could decrease firefighter suppression activities by creating an additional safety hazard during firefighting activities. Additionally, about 6.5 miles of the existing transmission lines to which the Alternative 2a would be parallel form transmission bounded islands, which create a considerable obstruction for fire suppression efforts and create an area that poses a threat to firefighter safety. Results from the risk assessment Model 1 are presented below in Table 4.2.11-8.

TABLE 4.2.11-8. ALTERNATIVE 2A MODEL 1 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	13 miles	8 miles	5 miles	3 miles
Project Condition	3 miles	10.5 miles	9 miles	6.5 miles

Under Project conditions, the majority of the route would result in increases to moderate, high and very high risk categories of safety hazard for firefighters and reduction of the effectiveness of firefighting. Specifically, the Alternative would result in an increase of 2.5 miles, four miles, and 3.5 miles of the moderate, high and very high risk assessment categories, respectively, from existing condition to Project condition. The majority of the increase in the moderate category occurs between borderzone segments 1 and 18 as a result of the increase in ROW widths from an additional transmission line parallel the existing transmission lines within the utility corridor. Alternative 2a would include about 14 miles of new transmission line adjacent to one or more existing transmission lines. The incremental increase in parallel ROWs creates an obstruction of fire suppression efforts, but is not as considerable where there are no existing transmission lines. Alternative 2a would include about 6.5 miles of new transmission line that avoids the community of Green Valley and does not parallel an existing facility; a new line that does not parallel an existing facility poses the greatest impact to fire suppression efforts and risk to firefighter safety because a new line is present where there was no previous obstruction.

Additionally, the Alternative introduces about one mile of new transmission bounded island, which severely limits access to areas during a wildfire event and poses a risk to fire fighter safety.

Alternative 2a also introduces about 10.5 miles of increased transmission line height adjacent to existing facilities, posing an obstruction to firefighting suppression efforts and increasing risk to firefighter safety, especially for aerial suppression efforts. This attribute was quantified with respect to an incremental increase adjacent to existing facilities or the introduction of a new transmission line that does not parallel any existing facilities.

Approximately one mile of Alternative 2a would require new road construction, which would increase access for firefighting suppression efforts.

Four miles of Alternative 2a are proposed for helicopter construction. Most of the helicopter construction locations would be in steep terrain where there is very limited ground vehicle access. Helicopter construction and/or maintenance practices in these remote regions of the ANF introduce additional wildfire risk elements that would create high impacts requiring mitigation. Wildfire risk elements, such as heavy fuel loads, steep terrain, helicopter fueling sites, delays in initial attack response for a fire ignition, aerial contact with parallel transmission during construction, and restricted suppression working space at the remote work sites, must be managed throughout the life of the Project.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-1 and 4.2.11-2 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2a borderzone associated with Significance Criterion WF-1 derived from the modeling.

Three-circuit Mitigation

The proposed three-circuit mitigation as described above for Alternative 2 (Proposed Action) would also be relevant for a portion of Alternative 2a between segments 23 and 25, and segment 35. The effects of this mitigation would be similar to those described under Alternative 2.

CEQA Significance

Mitigation measures F-1a, F-1b, F-1d, F-1e, F-1f, and F-2a are recommended to reduce adverse impacts associated with the construction and maintenance activities of the transmission line as well as the presence of the transmission line during operation. F-1a would remove, to the extent practicable, transmission line bounded islands that would potentially prevent fire suppression activities. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1d, F-1e, and F-2a would ensure proper planning and communication between Project-related construction and operation activities with firefighting activities. F-1f would ensure that proper FAA signage or lighting requirements would be met during final design of the transmission line. With the implementation of these mitigation measures, Impact F-1 would be reduced to a less than significant level.

Impact F-2: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.

The evaluation of this impact is based on Criterion WF-2 and the results from Risk Assessment Model 2.

> *The Project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.*

As described by Model 2 results, new risks to public safety through an increased risk of wildfire would be introduced into the BRRTP fireshed as a result of Alternative 2a. Existing conditions along this Alternative contain 17 miles of borderzone that intersect an historic fire event that occurred within the last 50 years; 10 miles have witnessed more than one fire event in the last 50 years. Those areas in which a fire has previously occurred have a greater potential of experiencing another wildfire event and may adversely affect public safety through an increased risk of wildfire. Historic locations of fire ignition also play an important role and jeopardize public safety because these are the areas that have the greatest potential to burn due to their proximity to the ignition source; about 12 miles of the Alternative intersect a historic ignition point. Assets at risk including homes, businesses, and infrastructure are also a key component when considering public safety during a wildfire event, as these are often the most important factor in developing a plan to fight a wildfire and ensure public safety. Approximately 4.5 miles of Alternative 2a include at least one asset at risk. Results from the risk assessment Model 2 are presented below in Table 4.2.11-9.

TABLE 4.2.11-9. ALTERNATIVE 2A MODEL 2 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	15 miles	5.5 miles	8.5 miles	0 miles
Project Condition	9.5 miles	5.5 miles	11.5 miles	2.5 miles

The Alternative would result in increases of three and 2.5 miles of the high and very high risk assessment categories, respectively, from existing condition to Project condition. The high category increases occur where the Alternative would form a new ROW west of the community of Green Valley. The majority of the increase in the very high category occurs at borderzone segment 22 and between segments 37 and 40 as a result of the increase in the number of parallel transmission line ROWs. Alternative 2a would include about 14 miles of new transmission line adjacent to one or more existing transmission lines. The presence of a transmission line mainly increases the potential for wildfire events, which can adversely affect public safety due to the potential of wildfire ignitions from the transmission line and the ignition potential from maintenance activities or non-transmission related use of access roads. Areas where a new transmission line is introduced where it does not parallel an existing transmission line corridor exhibit an increased adverse affect on public safety through an increased risk of wildfire because there is the introduction of access to a new area, increasing ignition potential to an area where previously only lightning ignitions could occur. Areas where a new transmission line does not parallel an existing facility also increase the potential for the public to access areas previously more difficult to get to, increasing persons' safety risk if they are in these areas during a wildfire event. New transmission facilities that do not parallel existing lines would occur for about 6.5 miles of Alternative 2a.

Finally, new roads would be required for about one mile of the construction of Alternative 2a and would increase the risk of wildfire, as they provide greater access to areas near the Alternative, increasing the potential for accidental or intentional ignitions or the risk for public who may be in these areas during a wildfire event.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-3 and 4.2.11-4 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2a borderzone associated with Significance Criterion WF-2 derived from the modeling.

CEQA Significance

Mitigation measures F-1b, F-1c, F-1d, F-1e, F-2a, F-2b, F-2c, and F-3a are recommended to reduce adverse impacts associated with the increased risk of wildfire. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1c, F-1d, F-1e, F-2a, and F-2b would ensure proper funding, planning and communication between Project-related construction and operation activities with firefighting activities, including the maintenance of important firebreaks on the ANF. F-2c would remove potential hazards from work areas that could pose a fire hazard. F-3a identifies potential funding sources for fire prevention measures on private property. With the implementation of these mitigation measures, Impact F-2 would be reduced to a less than significant level.

Impact F-3: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

The evaluation of this impact is based on Criterion WF-3 and the results from Risk Assessment Model 3.

> *Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.*

As described by Model 3 results, new risks to native vegetation alteration would be introduced into the BRRTP fireshed as a result of Alternative 2a. Existing conditions of the vegetation of the borderzones along Alternative 2a exhibit considerable fire-related characteristics. The Scott and Burgan Fuel Ranking applied to the model identifies the areas where fuels would encourage the quickest spread of wildfire; about 15 miles of Alternative 2a are ranked "High" for this attribute. The FRAP Fire Regime and Condition Class Data (2003) indicates canopy density of the existing vegetation, fire regime in relation to its historical range, and frequency of historical fire events. Where there is a greater frequency of fire events, there is greater potential for the introduction of fire-prone weeds and subsequent wildfire. About one mile of Alternative 2a borderzones is ranked high in terms of its fire regime; 23 miles are ranked moderate. One borderzone segment, one half mile, of the alternative was eliminated from Model 3 because it is nearly all agricultural and not subject to vegetation analysis. Results from the risk assessment Model 3 are presented below in Table 4.2.11-10.

TABLE 4.2.11-10. ALTERNATIVE 2A MODEL 3 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	11.5 miles	13.5 miles	2.5 miles	1 miles
Project Condition	2.5 miles	14 miles	9.5 miles	2.5 miles

Under Project conditions, the low rankings decrease; however, the moderate, high and very high rankings increase by 1.5, seven, and 1.5 miles, respectively. The majority of the increase would occur in the northern portion of the BRRTP fireshed in the Antelope Valley between borderzone segments 14 and 20 as a result of the increase in parallel ROWs where Alternative 2a would include a new transmission line adjacent to existing transmission lines, which would occur for about 14 miles of the alternative. About 6.5 miles of Alternative 2a would include a new transmission line that does not parallel an existing transmission line corridor, resulting in the increases to the high and very high risk categories. Portions where Alternative 2a is not adjacent to an existing transmission line corridor are more noteworthy because these areas would not have been previously accessed for transmission line construction or maintenance. The presence of a new transmission line increases the risk for introduction of non-native plants species that may be more fire-prone than the existing plant species.

Finally, new roads would be required for about one mile of the construction of Alternative 2a and would increase the risk of native vegetation alteration, as they provide greater access to areas near the alternative.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-5 and 4.2.11-6 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 2a borderzone associated with Significance Criterion WF-3 derived from the modeling.

CEQA Significance

Biological mitigation measure BIO-2 (see Section 4.3.1) would reduce the adverse impacts of Impact F-3 to a less than significant level through the implementation of a weed management plan.

Alternative 3

Impact F-1: The presence of new or additional overhead transmission lines, including construction and maintenance activities, would pose an additional safety hazard for firefighters and reduce the effectiveness of firefighting.

The evaluation of this impact is based on Criterion WF-1 and the results from Risk Assessment Model 1.

The presence of the Project, as well as construction and maintenance activities, may create obstructions to fire suppression efforts.

New obstructions to firefighting suppression efforts and risks to firefighter safety would be introduced into the BRRTP fireshed with the addition of Alternative 3. Existing conditions exhibit about 13 miles of existing wooden pole contact, which creates the potential for the Alternative to be struck by a wooden pole. These areas could decrease firefighter suppression activities by creating an additional safety hazard during firefighting activities. Additionally, about 7.5 miles of the existing transmission lines to which Alternative 3 would be parallel form transmission bounded islands, which create a considerable obstruction for fire suppression efforts and create an area that poses a threat to firefighter safety. Results from the risk assessment Model 1 are presented below in Table 4.2.11-11.

TABLE 4.2.11-11. ALTERNATIVE 3 MODEL 1 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	8.5 miles	22.5 miles	9 miles	1.5 miles
Project Condition	1 mile	17.5 miles	21.5 miles	1.5 miles

Under Project conditions, the majority of the route would result in moderate and high risk of safety hazard for firefighters and reduction of the effectiveness of firefighting. Specifically, the Alternative would result in an increase of 12.5 miles of high risk from existing condition to Project condition. The very high risk assessment category would remain unchanged from existing to Project condition. The increase in the high category is a result from an increase in the ROW widths. Alternative 3 would include about 42 miles of new transmission line adjacent to one or more existing transmission lines, the entire portion within the BRRTP fireshed. The incremental increase in parallel ROWs creates an obstruction of fire suppression efforts but does not pose as high of a risk as compared to areas where there are no existing transmission lines. Additionally, the Alternative introduces no new transmission bounded islands and actually eliminates about 1.5 miles of an existing transmission bounded island, south of the proposed Haskell Switching Station through the alignment location between the two existing LADWP transmission lines. Alternative 3 does not introduce an increase in transmission line height adjacent to existing facilities, posing no additional obstruction to firefighting suppression efforts.

Approximately three miles of Alternative 3 would require new road construction, which would increase access for firefighting suppression efforts.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-1 and 4.2.11-2 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 3 borderzone associated with Significance Criterion WF-1 derived from the modeling.

CEQA Significance

Mitigation measures F-1a, F-1b, F-1d, F-1e, F-1f, and F-2a are recommended to reduce adverse impacts associated with the construction and maintenance activities of the transmission line as well as the presence of the transmission line during operation. F-1a would remove, to the extent practicable, transmission line bounded islands that would potentially prevent fire suppression activities. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1d, F-1e, and F-2a would ensure proper planning and communication between Project-related construction and operation activities with firefighting activities. F-1f would ensure that proper FAA signage or lighting requirements would be met during final design of the transmission line. With the implementation of these mitigation measures, Impact F-1 would be reduced to a less than significant level.

Impact F-2: Construction and/or maintenance activities would increase the risk of a wildfire event where public safety is threatened.

The evaluation of this impact is based on Criterion WF-2 and the results from Risk Assessment Model 2.

> *The Project construction and/or maintenance activities may adversely affect public safety through an increased risk of wildfire.*

As described by Model 2 results, new risks to public safety through an increased risk of wildfire would be introduced into the BRRTP fireshed as a result of Alternative 3. Existing conditions along this Alternative contain 27 miles of borderzone that intersect an historic fire event that occurred within the last 50 years; 17 miles of the route have had more than one fire event in the last 50 years. Those areas in which a fire has previously occurred have a greater potential of experiencing another wildfire event and may adversely affect public safety through an increased risk of wildfire. Historic locations of fire ignition also play an important role and jeopardize public safety because these are the areas that have the greatest potential to burn due to their proximity to the ignition source; about 11 miles of the alternative intersect a historic ignition point. Assets at risk including homes, businesses, and infrastructure are also a key component when considering public safety during a wildfire event, as these are often the most important factor in developing a plan to fight a wildfire and ensure public safety. Approximately 15.5 miles of Alternative 2 include at least one asset at risk. Results from the risk assessment Model 2 are presented below in Table 4.2.11-12.

TABLE 4.2.11-12. ALTERNATIVE 3 MODEL 2 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	7 miles	19.5 miles	13 miles	2 miles
Project Condition	7 miles	10 miles	20.5 miles	4 miles

The alternative would result in a decrease of 9.5 miles of moderate rating, with increases of 7.5 and two miles of the high and very high risk assessment categories, respectively, from existing condition to Project condition. Alternative 3 would include about 42 miles of new transmission line adjacent to one or more existing transmission lines. The presence of a transmission line increases the potential for wildfire events, which can adversely affect public safety due to the potential of wildfire ignitions from the transmission line and the ignition potential from maintenance activities or non-transmission related use of access roads.

Finally, new roads would be required for about three miles of the construction of Alternative 3 and would increase the risk of wildfire, as they provide greater access to areas near the Alternative, increasing the potential for accidental or intentional ignitions or the risk for public who may be in these areas during a wildfire event.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-3 and 4.2.11-4 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 3 borderzone associated with Significance Criterion WF-2 derived from the modeling.

CEQA Significance

Mitigation measures F-1b, F-1c, F-1d, F-1e, F-2a, F-2b, F-2c, and F-3a are recommended to reduce adverse impacts associated with the increased risk of wildfire. F-1b would remove the potential for wooden pole contact through proper engineering of the proposed transmission line. F-1c, F-1d, F-1e, F-2a, and F-2b would ensure proper funding, planning and communication between Project-related construction and operation activities with firefighting activities, including the maintenance of important firebreaks on the ANF. F-2c would remove potential hazards from work areas that could pose a fire hazard. F-3a identifies potential funding sources for fire prevention measures on private property. With the implementation of these mitigation measures, Impact F-2 would be reduced to a less than significant level.

Impact F-3: Project activities would introduce non-native plants, altering fire regimes by increasing ignition potential and rate of fire spread.

The evaluation of this impact is based on Criterion WF-3 and the results from Risk Assessment Model 3.

Activities associated with project construction and/or maintenance may result in native vegetation alteration due to the introduction of fire prone weeds and increase in potential for wildfire.

As described by Model 3 results, new risks to native vegetation alteration would be introduced into the BRRTP fireshed as a result of Alternative 3. Existing conditions of the vegetation of the borderzones along Alternative 3 exhibit considerable fire-related characteristics. The Scott and Burgan Fuel Ranking applied to the model identifies the areas where fuels would encourage the quickest spread of wildfire; about 27 miles of Alternative 3 are ranked "High" for this attribute. The FRAP Fire Regime and Condition Class Data (2003) indicates canopy density of the existing vegetation, fire regime in relation to its historical range, and frequency of historical fire events. Where there is a greater frequency of fire events, there is greater potential for the introduction of fire-prone weeds and subsequent wildfire. About 1.5 miles of Alternative 3 borderzones are ranked high in terms of its fire regime; 35.5 miles are ranked moderate. Results from the risk assessment Model 3 are presented below in Table 4.2.11-13.

TABLE 4.2.11-13. ALTERNATIVE 3 MODEL 3 RISK ASSESSMENT RESULTS

	Low	Moderate	High	Very High
Existing Condition	3 miles	18.5 miles	19 miles	1 miles
Project Condition	3 miles	11.5 miles	17.5 miles	9.5 miles

Under Project conditions, the moderate and high rankings decrease; however, the very high rankings increase by 8.5 miles. The majority of the increase would occur in the southern portion of the BRRTP fireshed between borderzone segments 54 and 79 as a result of the increase in parallel ROWs where Alternative 2 would include a new transmission line adjacent to existing transmission lines, which would occur for about 42 miles. The presence of a new transmission line increases the risk for introduction of non-native plants species that may be more fire-prone than the existing plant species.

Finally, new roads would be required for about four miles of the construction of Alternative 3 and would increase the risk of native vegetation alteration, as they provide greater access to areas near the alternative.

Refer to Appendix F of this Final EIS/EIR for the wildfire data tables that specifically locate the conditions by borderzone segment. Figures 4.2.11-5 and 4.2.11-6 illustrate the existing conditions and post-Project risk assessment conditions within the Alternative 3 borderzone associated with Significance Criterion WF-3 derived from the modeling.

CEQA Significance

Biological mitigation measure BIO-2 (see Section 4.3.1) would reduce the adverse impacts of Impact F-3 to a less than significant level through the implementation of a weed management plan.

Summary and Comparison of Alternatives

Table 4.2.11-14 provides a summary comparison for each action Alternative of modeled existing and Project wildfire risk conditions associated with each of the three wildfire and fuels impacts that were identified as part of the fireshed assessment.

TABLE 4.2.11-14. MILES OF WILDFIRE RISK CONDITIONS PER ALTERNATIVE

Risk Conditions per Alternative	Model 1 – Firefighter Safety and Obstruction to Suppression				Model 2 – Potential for Wildfire				Model 3 – Native Vegetation Alteration			
	Very High	High	Mod	Low	Very High	High	Mod	Low	Very High	High	Mod	Low
1 – Existing	7	9	9.5	7	4.5	10	11.5	6.5	5.5	8	17.5	1.5
1- Project	10	17.5	5	0	8	16.5	7.5	0.5	13.5	5.5	12	1.5
2 – Existing	3.5	5.5	9.5	9	0	11	7	9.5	1	2.5	19.5	4
2- Project	4.5	6.5	13	3.5	2.5	11.5	4	9.5	1.5	5.5	16	4
2a - Existing	3	5	8	13	0	8.5	5.5	15	1	2.5	13.5	11.5
2a - Project	6.5	9	10.5	3	2.5	11.5	5.5	9.5	2.5	9.5	14	2.5
3 – Existing	1.5	9	22.5	8.5	2	13	19.5	7	1	19	18.5	3
3 - Project	1.5	21.5	17.5	1	4	20.5	10	7	9.5	17.5	11.5	3

4.2.12 ELECTRICAL EFFECTS

Introduction

This section provides an overview and defines, identifies, and assesses possible electrical effects from the Project. It presents the significance criteria on which impact determinations are based, recommends specific measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate) adverse impacts anticipated from Project construction, operation, maintenance, and decommissioning relevant to electrical effects, and defines and lists the overall impacts identified for the Proposed Action and Alternatives.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to electric and magnetic fields are addressed in this analysis:

- Increased EMF emissions, especially in corridors with existing high voltage transmission lines.
- Power line fields generated by the Project would result in induced currents or shock hazards to the public.

Issues and concerns related to potential public health impacts due to electric and magnetic fields (EMF) generated by the Project were also raised at the scoping meetings. This section does not consider potential health risks associated with EMF exposure, specifically exposure to magnetic fields, as there is no consensus in the scientific community regarding health risks associated with EMF exposure and, therefore, conclusions regarding this concern cannot be reached in this analysis. However, information regarding research on EMF associated with utility facilities is presented in Chapter 3, Section 3.2.12 (Electrical Effects) to allow an understanding of the issue by the public and decision-makers.

Impact Assessment Methodology

This section provides an overview of the methodology used and the determinations made for electrical effect impacts along the Proposed Action and Alternative alignments, in terms of both construction and post-construction (maintenance) periods.

EMF from the transmission lines of the Proposed Action and Alternatives were calculated at the edge of the ROW and within the ROW. EMF levels were calculated at a height of one meter above ground with phase conductors at minimum conductor heights. This is typically at the mid-span. The minimum ground clearances used for the 115 kV, 230 kV, and 500 kV transmission lines is 25 feet, 30 feet, and 35 feet respectively. The clearances are determined according to California Public Utility Commission General Order No. 95 ("Rules for Overhead Electric Line Construction), at a temperature of 130°F. The conductor type and sizes, maximum operating voltages and peak circuit loading for the circuits are shown in Table 4.2.12-1. For the case studies, the phasing of the single phase circuits is A-B-C from left to right phases for the double or vertical circuits, the phasing is A-B-C from bottom to top phases. For the double-circuit lines, the phasing is the same for both circuits.

TABLE 4.2.12-1. TRANSMISSION LINE CIRCUITS - CONDUCTOR DESCRIPTIONS AND ELECTRICAL CHARACTERISTICS

Transmission Line	Conductor Type and Size	Maximum Operating Voltage, kV	Peak Load Current, Amps
LADWP 115 kV Lines	250 MCM Copper	121	250
New BRRTP 230 kV (Two Circuits)	2156 kcmil ACSS/AW	242	1,987
Barren Ridge – Rinaldi 230 kV	1433.6 kcmil ACSS/TW/HS	242	1,632
Three Circuit Line			
New BRRTP 230 kV (Two Circuits)	2156 kcmil ACSS/AW	242	1,987
Haskell – Rinaldi 230 kV	2156 kcmil ACSS/AW	242	1,589
Haskell – Rinaldi 230 kV	2156 kcmil ACSS/AW	242	1,627
Haskell – Sylmar 230 kV	2156 kcmil ACSS/AW	242	1,810
Haskell – Olive 230 kV	2156 kcmil ACSS/AW	242	1,251
Castaic – RS J	2156 kcmil ACSS/AW	242	1,127
LADWP 500 kV PDCI	2312 kcmil ACSR	500	3,100
SCE 66 kV	605 kcmil ACSR	72 kV	750
SCE 168 kV	1033.3 kcmil ACSR	176	1,160
SCE 220 kV	1590 kcmil ACSR	242	1,660
SCE 500 kV	2156 kcmil ACSR	550	5,250

Line Configurations for Electrical Effects Evaluation

There are eleven configurations were identified for the investigation of electrical effects calculations and are listed below. They are the same configurations from the noise section (Section 4.2.1), and Figure 4.2.1-1 illustrates their locations.

Configuration A

- North of Mojave, California
- Common to all action Alternatives
- New BRRTP 230 kV double-circuit transmission line
- Reconductored BR-RIN 230 kV single-circuit transmission line
- LADWP 500 kV PDCI single-circuit transmission line

Configuration B

- Located in Alternative 1 just north of the 138 freeway
- New BRRTP 230 kV double-circuit transmission line
- Existing 12 kV distribution line

Configuration C

- Located in Alternative 1 just west of Castaic Power Plant
- New BRRTP 230 kV double-circuit transmission line
- Three existing SCE 220 kV double-circuit transmission lines

Configuration D

- South side of Castaic Lake
- Common to all action Alternatives
- Two existing LADWP 230 kV double-circuit transmission lines (northern tower has one existing circuit and a vacant position)

- Addition of a new 230 kV circuit on northern tower
- The implementation of Alternative 1 would require the construction of a new double-circuit 230 kV transmission line to the south side of the existing towers.

Configuration E

- Located in Alternatives 2, 2a, and 3 at the intersection of the 138 freeway
- New BRRTP 230 kV double-circuit transmission line
- Reconductored BR-RIN 230 kV single-circuit transmission line
- SCE 220 kV single-circuit transmission line
- LADWP 500 kV PDCI single-circuit transmission line

Configuration F

- Located in Alternatives 2 and 2a in Elizabeth Lake
- Three-circuit structure 230 kV transmission line (includes new BRRTP 230 kV transmission line)
- LADWP 500 kV PDCI single-circuit transmission line

Configuration G

- Located in Alternative 3 north of the Antelope Substation
- New BRRTP 230 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 69 kV double-circuit transmission line
- SCE 220 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line

Configuration H

- Located in Alternative 3 south of Antelope Substation
- New BRRTP 230 kV double-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 220 kV single-circuit transmission line

Configuration I

- Located in Alternative 3 in Leona Valley
- New BRRTP 230 kV double-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 500 kV single-circuit transmission line
- SCE 66 kV double-circuit transmission line
- SCE 220 kV single-circuit transmission line

Configuration J

- Located in Alternative 3 in Agua Dulce
- New BRRTP 230 kV double-circuit transmission line
- LADWP 500 kV single-circuit transmission line
- LADWP 500 kV single-circuit transmission line

Configuration K

- In Santa Clarita
- Common to all action Alternatives
- Reconductoring of BR-RIN 230 kV transmission line
- Four-circuit structure 230 kV transmission line
- Existing LADWP 115 kV double-circuit transmission lines
- LADWP 500 kV PDCI single-circuit transmission line

"EMF" is the expression commonly used when talking about "power-frequency electric and magnetic fields." Power-frequency electric and magnetic fields are a natural consequence of the flow of electricity
The strength of electric and magnetic fields can either be measured using a gaussmeter or estimated using formulas factoring in voltages, currents, and transmission system designs.

Electric fields are produced by the voltage on a conductor and rapidly decrease with the distance from the source. The electric field can easily be shielded by trees, fences, buildings, and most other structures.
The strength of the electric field is a function of transmission system design and the magnitude of the voltage level. Electric fields are measured in units of kilovolts per meter (kV/m).

Magnetic fields are produced by the current in a conductor. They also rapidly decrease with distance from the source. Magnetic fields are much more difficult to shield than electric fields. The strength of the magnetic field is a function of transmission system design and the magnitude of the current. Magnetic fields are measured in units called milligauss (mG).

While the fields from each power line would vary depending on load, design and other factors, examples of possible magnetic field levels that could be found near different voltages of transmission lines are shown in Table 4.2.12-2.

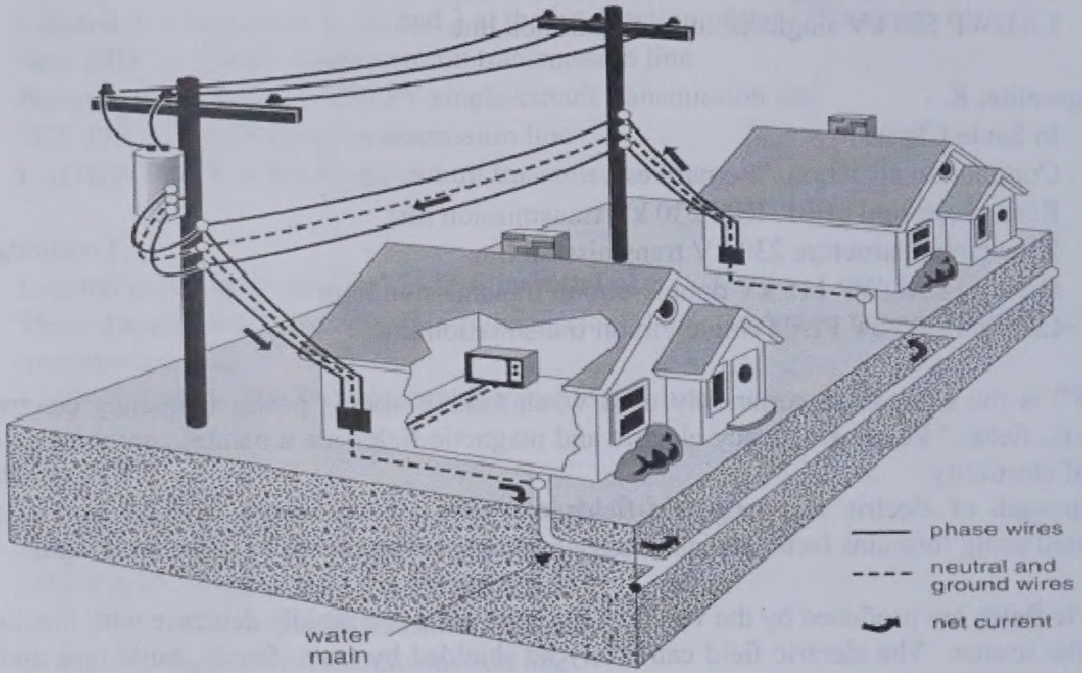
TABLE 4.2.12-2. EXAMPLE OF POWER FREQUENCY MAGNETIC FIELDS FROM ELECTRIC TRANSMISSION LINES

Source of Magnetic Fields	Distance from Source or Location	Magnetic Fields (mG)
500 kV Transmission Line	Edge of Right-of-Way	150
230 kV Transmission Line	Edge of Right-of-Way	60
66 kV Transmission Line	Under the Line	50
12 kV Distribution Line	Under the Line	7

Figure 4.2.12-1 shows examples of sources of magnetic fields in and around a residence. These sources also exist in and around other buildings, such as schools, offices, stores, and businesses.

Electric and magnetic fields can be detected and measured near internal wiring, electrical appliances, water pipes, and wherever electrical voltages and currents are present.

FIGURE 4.2.12-1. SOURCES OF MAGNETIC FIELDS



Two broad types of EMF regulations apply to transmission lines: 1) engineering or safety-based, and 2) health effects. Engineering-based electric field levels are intended to limit electric discharges that could cause a nuisance shock. There is also a safety code to limit more harmful electrical shocks from electric fields (National Electrical Safety Code, NESC). No limits have been set on known or established health effects. Because no scientific evidence establishes health effects from EMF exposure, there are no state or federal health-based standards for limiting exposure to those fields.

Several states have implemented engineering standards regarding EMF within and at the edge of transmission line ROW (NIEHS 2002; Table 4.2.12-3). Magnetic field levels have been set in New York (200 mG maximum load) and Florida (150 mG maximum load for 230 kV) to limit magnetic fields at the ROW edge under certain maximum electrical loading conditions so that new transmission lines would have similar field levels to existing, operational transmission lines.

Exposure limits have been established or recommended by several different organizations. These address both electrical field and magnetic field exposure for a variety of conditions.

- The Institute of Electrical and Electronics Engineers (IEEE) specifies an unperturbed power frequency electric field of 5 kV/m for the general public at the ROW edge, 10 kV/m within the ROW, and 20 kV/m in a controlled environment.[4] For magnetic fields, the general public exposure should be below 9,040 mG. In controlled environments, this increases to 27,100 mG (IEEE 2002). These magnetic field values are unlikely to be encountered in either residential or occupational settings.

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[4] Controlled Environment is defined by the IEEE as "An area that is accessible to those who are aware of the potential for exposure as a concomitant of employment, to individuals cognizant of exposure and potential adverse effects, or where exposure

- A general international standard by The International Commission on Non-Ionizing Radiation Protection (ICNIRP), has established a public (uncontrolled) exposure magnetic field guideline of 833 mG and an electric field guideline of 4.167 kV/m for 60 Hz fields (ICNIRP 1998).
- The American Conference of Governmental Industrial Hygienists (ACGIH) published "Threshold Limit Values" for EMF (ACGIH 2001). Recommended occupational exposures should not exceed 25 kV/m for electric fields and 10,000 mG for magnetic fields. Above 15 kV/m, the ACGIH recommends the use of protective clothing. For workers with cardiac pacemakers, recommended exposures should not exceed 1 kV/m for electric fields and 1,000 mG for magnetic fields.
- The International Committee on Electromagnetic Safety (ICES) published a guideline recommending magnetic field levels below 9,040 mG, based on the IEEE general public exposure value (ICES 2002).
- The National Electrical Safety Code (NESC 2007) requires that the electric field or its effects be reduced such that the largest anticipated object under a transmission line have a current to ground of no greater than 5 milliamps (5 mA). High voltage transmission lines can induce a voltage and therefore induce electric currents in metallic objects such as a truck parked under the transmission line. Average adult humans can detect electric currents of about 1-2 mA. Electric currents above 5 mA can cause pain and can be harmful to the body. Therefore the NESC requires that additional ground clearance or other means shall be used to limit electric field effects to 5 mA or less.

Electric and Magnetic Induction

Electric field considerations in the immediate vicinity of electric transmission lines include the potential for electric shock, the clearance of the transmission lines above ground, measures to prevent unauthorized climbing of the poles, and the proximity of the transmission lines to other utilities such as oil wells and pipelines.

Electric induction involves an electrical interaction between the power line and object and is referred to as "capacitive coupling". In this type of coupling, a voltage is produced onto objects that are near the power line. The electric induction coupling effect is greater for objects insulated from ground.

The electric field created by a high-voltage transmission line extends from the energized conductors to other conducting objects such as the ground, towers, vegetation, buildings, vehicles, and persons. Potential field effects can include induced currents, steady-state current shocks, spark discharge shocks and, in some cases, field perception and neurobehavioral responses.

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is the incidental result of passage through areas posted with warnings, or where the environment is not accessible to the general public and those individuals having access are aware of the potential for adverse effects." (IEEE 2002)

Magnetic induction is a result of the current in the transmission line conductor coupling voltages into a parallel conductor system (fence, pipeline, etc.). This effect is referred to as "inductive coupling" or "magnetic coupling." The important concept here is that the conductor system should be generally in parallel to the line to cause any significant coupling or induction effects. The maximum induced voltage occurs when the transmission line and the other conductor system are parallel and it reduces to a minimum when they are perpendicular. The parallel conductors may be other transmission lines, communication circuits, fences, etc. The induced voltage is primarily a function of the line current, distance from the line, and height of the conductors.

Induced Currents

Induced currents during steady state conditions are those that flow continuously after a person contacts an object, such as a vehicle, and provides a path to ground for the induced current. The effects of induced currents range from involuntary movement in a person to direct physiological harm. Steady-state induced current effects occur in instances of direct or indirect human contact with an energized transmission line. Table 4.2.12-3 demonstrates the effects of a 60-cycle, hand-to-foot shock of one second's duration.

TABLE 4.2.12-3. ELECTRIC CURRENT EFFECTS ON THE HUMAN BODY[5]

Current Level (mA)	Probable Effect on Human Body
1	Perception level. Slight tingling sensation. Still dangerous under certain conditions.
5	Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
6-30	Painful shock, muscular control is lost. This is called the freezing current or "let-go" range.
50-150	Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go. Death is possible.
1,000-4,300	Ventricular fibrillation (the rhythmic pumping action of the heart ceases). Muscular contraction and nerve damage occur. Death is most likely.
10,000	Cardiac arrest, severe burns and probable death.

Objects

Many types of objects may be in or near the ROW either permanently or temporarily. A discussion of induction effects in objects is presented below.

The induced current for possible structures and fences in or near the ROW can be determined analytically for electrical induction. This is presented for the Alternatives and the reconductor corridor.

Structures

Structures near the BRRTP 230 kV transmission line may be quite large, e.g., barns and large storage buildings. Since induction effects generally increase with the size of the object, there may be perceptible currents or sparks. On the other hand, such objects are often naturally grounded. This would significantly reduce the magnitude of currents or sparks that a person can receive due to electric field induction. If the object is not naturally grounded, it is usually a simple procedure to ground the object to mitigate electric field effects. The occasional stationary, conductive object that is not well-grounded could present the opportunity for an annoyance or startle reaction to a person in a sufficiently strong electric field. An example of such an object is a wooden barn with a metal roof. A person climbing an aluminum ladder that leans against the wood and touches the roof could perceive an induced current.

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[5] "How Electrical Current Affects the Human Body". U.S. Department of Labor OSHA, www.osha.gov.

Buildings and storage sheds are not usually permitted on a (ROW), but these low electric fields exist outside of many ROWs. When in such fields, it is easy to mitigate startle or annoyance possibilities by attaching a ground wire to the metal roof.

This protection also provides a measure of lightning protection for the structure. Buildings entirely made of metal are not normally of any concern because they are often inherently well-grounded. But exceptions might exist for structures on wood foundations or on a high-resistance material. Again, it is usually a simple matter to ground such objects if necessary.

In the same manner, rain gutters on a large house close to the transmission line could conceivably deliver a perceptible shock to a person on an aluminum ladder. Quantitative worst-case analysis of any particular case can be difficult.

Long Parallel Conductors

The major long, parallel conductors in and near the transmission line corridor are fences, pipelines and railroad tracks. Electric and magnetic induction both factor into the effects for long, parallel conductors from the transmission line. Magnetic induction depends on the "steady-state" or normal operating current in the line and the possibility of a fault occurring on the transmission line in the area of question.

Long fence wires that are strung on wooden posts can present induced current effects if they run more or less parallel and close to the BRRTP corridor transmission lines. The insulation quality of the wooden posts is the controlling parameter. Perpendicular fences would have significantly less induced current and voltage. When exposed to weather, even wooden posts are not perfect insulators. The lack of insulation would reduce the induced voltage on a fence wire and would limit the magnitude of a spark discharge. Nevertheless, some fences could be well enough insulated by the posts to make contact currents annoying when the fence is touched. This type of fence would have to be close to the line and quite long before it could produce annoying currents.

Long fences are often grounded by contact with growing vegetation. If grounded in this manner, electric field effects would be reduced, although magnetic field effects would remain unaffected.

For an "electric fence," this is accomplished with a special filter designed to drain only the induced charge. However, a fence that is grounded at one or more points and otherwise insulated along a sufficient distance could present some noticeable magnetic field induction effects.

The insulation of a person's shoes does not always reduce the current he receives due to electric field induction on a fence or any other conductive object. However, currents due to magnetic field induction are very sensitive to a person's shoe resistance. Shoe resistance would usually limit magnetically induced currents to an insignificant level. On the other hand, if a person is not well insulated from the ground (e.g., barefoot and on damp earth), there is a greatly increased chance for significant magnetically induced current on contact with a long fence.

Buried Pipelines
In some areas of the Proposed Action and Alternatives, pipelines share the transmission line ROW or are close to the corridor. Magnetic fields penetrate the ground, and pipelines can be extremely long. Maximum voltages on the pipeline occur where there are discontinuities in either the transmission line or pipeline. When the transmission line and a pipeline are interacting, such discontinuities take the form of rapid changes in: 1) separation between the pipeline and transmission line; 2) the termination of the pipeline or an insulating junction in the pipeline (which amounts to the same thing); 3) sudden changes in pipeline coating characteristics; and 4) a junction between two or more pipelines or transposition of transmission line phases.

Note that the induction effects on pipelines during normal power line operating conditions are small compared to the induction effects experienced by a pipeline during a power line fault. The most severe kind of fault is a single-phase-to-ground fault during which high currents circulate in one of the power line phases and are not attenuated by any similar currents in other phases. Mitigation methods which are sufficient for single phase fault conditions are often adequate for steady-state conditions.

Magnetic induction effects can be produced by the transmission line under normal operating conditions and an electric fault on the system. The highest magnetically induced voltages occur when a fault occurs, since the currents in the line can be an order of magnitude greater than the normal or emergency load current. In spite of the relatively low magnetic field levels during steady-state conditions, induced voltages on an unprotected long metallic structure can reach hundreds of volts. Even with extensive grounding systems connected to the structure, pipeline potentials can be on the order of dozens of volts, with hundreds of amps flowing in the structure. This constitutes primarily an induced current effects hazard, which can be transferred miles away from the parallel corridor.

During single-phase-to-ground fault conditions on the power line (i.e., a single energized phase wire is shorted to a transmission line structure or substation grounding system), induced potentials in a neighboring conductor or long metallic structure with no mitigation system can reach thousands of volts, due to the intense magnetic field caused by the large current which may flow in the faulted wire. In magnetic coupling studies, it is important that transmission lines as far away as 1,000 feet or more from the power line under study be given serious consideration.

Mobile Objects
As explained previously, a large conducting object that is well-insulated from the ground might present an opportunity for a perceptible shock if it is in a strong enough electric field. One might expect that vehicles resting on rubber tires would always be well insulated and thus represent a frequent source of electric field-induced currents around high-voltage transmission lines. On the contrary, vehicle tires are usually somewhat conductive. Also, a person usually has sufficient resistance through the shoes so that actual induced currents would often be too small to be perceived. This is particularly true if both the person and vehicle are on the same type of surface; that is, both on a wet surface or both on a dry surface.

A vehicle can, however, be quite well-insulated if it rests on an insulating surface such as dry asphalt or gravel. A person can be reasonably well grounded if standing on grass or dirt, particularly if the earth is damp and the person is wearing leather-soled shoes. If these conditions exist simultaneously in a sufficiently high electric field, a person can receive a shock, which although not hazardous could still be annoying or startling.

Agricultural Equipment

Agricultural equipment can have dimensions approaching those of large road vehicles and as such can be subject to similar electric field induction levels. In practice, the conductivity of tires and good contact with the soil usually ensures that electric field induction on farm equipment is seldom perceived.

Irrigation systems often incorporate long runs of metallic pipes, which can be subject to magnetic field induction when parallel and close to transmission lines. Because of the pipeline's contact with moist soil, electric field induction is generally negligible, but annoying currents could still be experienced from magnetic coupling to the pipe. Pipe runs laid at right angles to the line would minimize magnetically induced currents, although such a layout is not always feasible. If any other mitigation is needed, it can be implemented by grounding and/or insulating the pipe runs.

Operation of irrigation systems beneath transmission lines presents another safety concern, particularly for systems that can project the water jet to conductor height. This concern is not caused by induction, but rather by the possibility of direct contact by conductive water. The water stream from a high-pressure nozzle generally consists of solid and broken-up portions. If the solid stream contacts an energized conductor, electric current conducted down the water stream may be hazardous to someone contacting the nozzle. Line contact by the broken-up part of the water stream is unlikely to present any hazard.

Although there are these legitimate concerns regarding irrigation systems, the only known, and unfortunately not infrequent, cause of serious accidents is inadvertent contact to lines by upended irrigation pipes, often during an attempt to remove a small field animal that has crawled into the pipe. For this reason, irrigation pipes that are very close to any power line should be moved with caution. The pipeline must not violate a safe electrical clearance space around line conductors.

LADWP High Voltage DC Pacific Intertie Transmission Line

A recent Electric Power Research Institute (EPRI) report[6] lists ion current density as another parameter which needs to be taken into consideration in the design of high voltage DC transmission lines. For the existing LADWP DC line, the circuit is bipolar and the designation is +/- left to right. There are no established regulatory limits for ion current density near high voltage DC transmission lines but the EPRI report suggests a combined electric field limit of 25 kV/m and an ion current density limit of100 nA/m^2 to keep nuisance effects below perceptible levels. Electrical effects were not assessed as the subject of this evaluation for the DC transmission line.

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[6] Advanced HVDC Systems at +/- 800 kV and Above, EPRI, Palo Alto, CA, 1013857, Final Report, November 2007.

Significance Criteria

Significance conclusions for individual impacts are not required for compliance with NEPA. Given the uncertainty of electrical effects and the inability of scientific investigations to identify any non-compliant level or component of EMF exposure, EMF impacts are appropriately addressed as speculative in accordance with CEQA Guidelines, Section 15145 which states, "If after thorough investigation a particular impact is found to be too speculative for evaluation, the conclusions shall be noted, and the discussion terminated." However, electrical hazards were identified during Project scoping. Therefore, significance criteria were developed for this topic and are the focus of the Alternatives discussion later in this section. Conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only.

Standard Practices

The proposed transmission lines would be constructed in accordance with industry and LADWP standards to minimize hazardous currents from direct or indirect human contact with an overhead, energized line. Features reducing the level of potential for induced current in objects near the transmission line also reduce the level of a possible induced current shock. The proposed line is expected to pose minimal hazards to humans.

For all structures, the short circuit or induced currents can be mitigated by properly grounding the structure. For structures with downspouts, it is a simple procedure to attach a wire to the downspout and ground it to a metal water pipe or a driven ground rod to mitigate induced current effects.

The possibility of annoyance due to electric field induction could be completely eliminated by solidly grounding the fence at a single point, such as with a metal fence post.

Mitigation of electric fences requires electrically breaking the fence into smaller grounded sections.

Generally, there are three techniques to mitigate high magnetically induced voltages below compliance levels for the fence, pipelines and railroad track system:

- Sectionalize the conductor system – electrically isolate the pipeline, fence, etc. in sections to keep the voltages down to a minimum without the opportunity to build up over long distances.
- Ground the conductor system – put grounds on the conductor system at key locations where the conductor system and transmission line change characteristics and locations relative to each other.
- Buried mitigation wires – install another system of parallel conductors to the pipeline, fence, etc. at key locations to allow the voltages of the multiple conductors to equalize to a common potential thus creating a low potential difference across a person's body that would not be unsafe.

Summary of Impact Analysis Results

Magnetic field calculation results for the Proposed Action and Alternatives are presented in the Barren Ridge Renewable Transmission Project Electric and Magnetic Fields Management Plan (FMP) report (see Appendix E of this Final EIS/EIR). The report identifies base case and mitigation schemes magnetic fields values at the edge of the ROW for all action Alternatives.

The primary conclusion from the FMP investigation is that optimum phasing of the adjacent circuits (identified for three and four circuit structures) would result in the largest reduction of magnetic fields at the edge of the ROW that meet the 15% CPUC guideline for minimum reduction of magnetic fields and can be achieved on a "no cost" basis.

The results summarized below focus on the potential electrical induction effect from the Project. Various case studies where fields were calculated are presented within each of the action Alternatives. The specific tables presenting the results of the calculated fields are presented in Volume II, Appendix M of this Final EIS/EIR.

No Action Alternative

Under the No Action Alternative neither the Proposed Action (Alternative 2) nor one of its Alternatives (Alternatives 1, 2a and 3) would be implemented. Consequently, associated new electrical effects impacts would not occur. However, in the absence of either the Proposed Action or one of its Alternatives, the purpose and need for power transmission capabilities would not be met.

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

The addition of the new Castaic 230 kV circuit would cross the unincorporated communities of Castaic and Saugus and the city of Santa Clarita and would parallel the new 230 kV transmission line for eight miles.

Configuration D

Configuration D is in the Castaic area along Paradise Road and conducted for the Castaic – Haskell corridor that comprises the new 230 kV BRRTP double-circuit line and two LADWP 230 kV transmission lines.

The transmission line structures for Configuration D are: the lattice 230 kV BRRTP double-circuit line; and lattice double-circuit structures for the existing LADWP 230 kV transmission lines. The ROW width for the 230 kV line was assumed to be 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration D would be a maximum of 4.2 kV/m within the ROW and 0.2 kV/m at the edge of the ROW (100 feet from centerline).

The calculated electric field for the existing corridor of Configuration D at the edge of the ROW (75 feet from the centerline of the existing 230 kV line) is 0.24 kV/m.

The electric field level at the edge of the ROW for the corridor with the addition of the new Castaic 230 kV circuit (which results in a total of four circuits) is approximately the same as the existing corridor that has three 230 kV circuits. The electric field levels are well below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

There are pipelines in the corridor with the new circuit. Magnetic and electrical induction effects would be mitigated through proper transmission line design.

Reconductoring

Configuration K

Configuration K is in the vicinity of the unincorporated community of Leona Valley and comprises the following lines:

- Four-circuit 230 kV line which includes the reconductored 230 kV Line
- Two LADWP 115 kV Transmission Line Circuits
- LADWP 500 kV PDCI Single-circuit Line

The transmission structures for Configuration K are: the lattice 230 kV four circuit structure; the lattice 500 kV PDCI single-circuit structure; and the lattice structure for the 115 kV LADWP double-circuit line.

The calculated electric fields from Configuration K would be a maximum of 6.8 kV/m within the ROW and 1.63 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration K is approximately the same as for the new corridor since the BR-RIN circuit is being reconductored which causes minimal effect on the electric fields. The maximum electric field values are primarily due to the DC transmission line but this transmission line has negligible electric induction effects to objects at the edge of the ROW compared to the AC transmission lines. Even with the existing four circuit 230 kV line, the electric field levels are well below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

The Santa Clarita Metrolink Rail and the Sylmar/San Fernando Metrolink Rail cross the corridor. Any electrical effects to the track systems and signal circuits would be mitigated in the transmission line design.

Existing Barren Ridge and Proposed Haskell Canyon Switching Stations

Generally, electric and magnetic fields values along the switching station perimeter are low compared to the interior of the switching station because of the distance to the energized equipment. Normally, the highest values of electric and magnetic fields around the perimeter of the switching stations are caused by the overhead transmission lines entering and leaving the switching stations, and not by switching station equipment. Electric fields outside of the fenced area of the switching stations are low compared to those inside the fence. This occurs because of shielding of metallic structures such as the switching station fence. Additional shielding may also be provided by nearby trees and shrubbery.

There are no sensitive receptors close to the existing Barren Ridge Switching Station. No impacts are anticipated to the sensitive receptors near the Haskell Canyon Switching Station (residential development and the Veluzat Motion Picture Ranch) because of the relatively large distances of the switching station to these sensitive receptors in terms of electrical effects.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each action Alternative. The discussion below includes information on the direct and indirect effects of the transmission line for each Alternative.

Alternative 1

The Alternative 1 transmission line would have the longest route of all the alternatives and extends a distance of 83 miles from the Barren Ridge Switching Station to the proposed switching station in Haskell Canyon. It would also have the most number of residences (106) within 1000 feet of the centerline. Three locations were identified along Alternative 1 to calculate noise impacts—Configurations A, B, and C.

Configuration A

The transmission structures for Configuration A are: the lattice 230 kV BRRTP transmission line double-circuit structure; the lattice 500 kV PDCI single-circuit structure; and the BR-RIN lattice 230 kV transmission line single-circuit structure. One of the proposed ROW widths for the 230 kV transmission line corridor is 200 feet with the distances to the edge of the ROW, 115 feet (towards the outside of the corridor) and 85 feet (towards the existing lines inside of the corridor).

The calculated electric fields from Configuration A would be 4.1 kV/m within the ROW and 3.4 kV/m at the edge of the ROW (85 feet from the centerline).

The calculated electric field for the existing corridor of Configuration A at the edge of the ROW (75 feet from the centerline of the 500 kV PDCI line) is 3.59 kV/m. This higher electric field is primarily due to the edge of ROW being closer to the existing DC transmission line. But the DC transmission line has negligible electric induction effects to objects at the edge of the ROW compared to the AC transmission lines. In addition these electric field levels are well below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

The land use is primarily undeveloped south of Barren Ridge Switching Station. There is some agriculture land use. High electric fields at road crossings would be mitigated by proper transmission line design. Agriculture equipment can be grounded or situated perpendicular to the transmission lines to mitigate induction effects from electric fields.

Configuration B

Configuration B is just north of Highway 138 and comprises the 230 kV BRRTP double-circuit line and a distribution line. The distribution line is assumed to be 12 kV and has two circuits. The distribution circuits are assumed to have 4/0 AWG ACSR conductor with an ampacity rating of 366 Amps[7]. This is in the Holiday Estates area.

The power line structures for Configuration B are: the lattice 230 kV, three circuit structure (BRRTP double-circuit and the BR-RIN 230 kV circuit); and a wood pole structure for the two distribution circuits. The ROW width for the 230 kV line was assumed to be 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration B would be a maximum of 3.9 kV/m within the ROW and 0.2 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration B at the edge of the ROW for the 12.5 kV line (25 feet from the centerline of the 12.5 kV line) is 0.06 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 0.14 kV/m higher than the existing corridor with the 12.5 kV line. The reason for the higher electric field levels for the new corridor with the BRRTP 230 kV transmission line is because the existing 12.5 kV distribution lines (which is a much lower power line voltage) produce significantly lower electric fields. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

There are residential land use and road crossings in this section of the corridor. Proper transmission line design would mitigate electric field induction effects.

Configuration C

Configuration C is in the Castaic area near Paradise Ranch Road and comprises the 230 kV BRRTP double-circuit transmission line and three existing SCE 230 kV single circuit transmission lines.

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[7] Southwire "Overhead Conductor Manual," 2nd Edition.

Configuration C is comprised of: a lattice 230 kV double circuit structure, and three lattice single circuit structures. The ROW width for the 230 kV line was assumed to be 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration C would be a maximum of 4.1 kV/m within the ROW and 0.76 kV/m at the edge of the ROW (75 feet from the centerline).

The calculated electric field for the existing corridor of Configuration C at the edge of the ROW for the SCE 230 kV transmission line (75 feet from the centerline) is 0.74 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately the same as for the existing corridor with the SCE 230 kV lines. This is because the higher electric field at the edge of the ROW in the corridor is due to the existing SCE 230 kV transmission line. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

There are residential land use and road crossings in this section of the corridor. Proper transmission line design would mitigate electric field induction effects.

Alternatives 2 and 2a

The Alternative 2 transmission line would be the shortest among the Alternatives at 61 miles. The Alternative 2a transmission line would be 63 miles from the Barren Ridge Switching Station to the proposed switching station in Haskell Canyon and would be very similar to Alternative 2 because they would share 56 miles of the same alignment. Seven miles of Alternative 2a would be re-routed around the unincorporated community of Green Valley and would create a new ROW outside of existing utility corridors in the ANF.

Five configurations were identified for Alternatives 2 and 2a; three of the five (A, D, and K) would be common to all action Alternatives and are discussed in the previous sections.

Configuration E

Configuration E is near Highway 138 and comprises three transmission lines along these routes. The transmission lines analyzed in Configuration E are as follows:

- Proposed BRRTP 230 kV Double-Circuit Line
- LADWP 500 kV BR-RIN PDCI Single-Circuit Line
- LADWP 230 kV BR-RIN Single-Circuit Line
- SCE 220 kV Single Circuit Transmission Line

The transmission structures for Configuration E are: the lattice 230 kV BRRTP transmission line double-circuit structure; a steel monopole SCE single circuit structure; the lattice 500 kV PDCI single-circuit structure; and the lattice 230 kV transmission line single-circuit structure. One of the proposed ROW widths for the 230 kV transmission line corridor is 200 feet with the distances to the edge of the ROW, 115 feet (towards the outside of the corridor) and 85 feet (towards the existing lines inside of the corridor).

The calculated electric fields from Configuration E would be a maximum of 3.9 kV/m within the ROW and 0.95 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration E at the edge of the ROW for the existing SCE 220 kV transmission line (75 feet from the centerline) is 0.85 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 0.1 kV/m higher for the new corridor. This is due to the addition of the two BRRTP 230 kV circuits which produces slightly higher electrics fields based on the assumption of a worse case design scenario. This can be mitigated by optimizing the phasing of the 230 kV circuits which would reduce the electric fields significantly. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW. This applies to Configurations E and F for Alternatives 2 and 2a.

There are residential, agriculture land use and road crossings in this section of the corridor. In addition, there are various gas and water pipelines in the corridors of Alternatives 2 and 2a. The transmission lines would produce electrical effects on the pipelines both under steady state and fault conditions. The electrical effects can be mitigated through proper transmission line design.

Configuration F
Configuration F is near the unincorporated communities of Green Valley and Elizabeth Lake. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV Three-Circuit Line
- LADWP 230 kV BR-RIN Single-Circuit Line
- LADWP 500 kV PDCI Single-Circuit Line

The transmission structures for Configuration F are: the lattice 230 kV; three circuit structure (BRRTP double-circuit and the BR-RIN 230 kV circuit); and the lattice 500 kV PDCI single-circuit structure. The ROW width for the 230 kV, three-circuit structure was assumed to be 125 feet (62.5 feet from the centerline to the edge of the ROW).

The calculated electric fields from Configuration F would be a maximum of 6.4 kV/m within the ROW and 0.16 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration F at the edge of the ROW for the existing two circuit 230 kV transmission line (100 feet from the centerline) is 0.1 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV three circuit line is approximately 0.06 kV/m higher than the existing corridor. This is due to the addition of the third 230 kV circuit which produces slightly higher electrics fields based on the assumption of a worse case design scenario. This can be mitigated by optimizing the phasing of the 230 kV circuits which would reduce the electric fields significantly. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

There are residential, agriculture land use and road crossings in this section of the corridor. The electrical effects can be mitigated through proper transmission line design.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

There are various gas and water pipelines in the corridors of Alternatives 2 and 2a. The transmission lines would produce electrical effects on the pipelines both under steady state and fault conditions. A separate investigation would need to be performed to determine the electrical effects. The electrical effects can be mitigated as discussed above.

Alternative 3

The Alternative 3 transmission line would extend a total of 76 miles from the Barren Ridge Switching Station to the proposed switching station in Haskell Canyon. This Alternative would have the most residents (242) within 1,000 feet of the centerline of any of the action Alternatives.

Eight configurations (A, D, E, G, H, I, J, K) were identified to calculate electrical effects for Alternative 3. Three of the eight configurations (A, D and K) would be common to all action Alternatives and are discussed in the previous sections.

Configuration G

Configuration G conducted for Alternative 3 comprises the BRRTP line, three SCE 500 kV lines, one SCE 69 kV line, and one SCE 230 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV Double-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 69 kV Double-Circuit Line
- SCE 220 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line

The transmission structures for Configuration G are: the BRRTP double circuit lattice 230 kV structure, three lattice 500 kV single circuit structures, a steel monopole 69 kV double circuit structure, and a steel monopole 220 kV single circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration G would be a maximum of 4.0 kV/m within the ROW and 0.13 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration G at the edge of the ROW adjacent to the existing SCE 500 kV transmission line (100 feet from the centerline) is 1.6 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 1.5 kV/m less than the existing corridor. This is due to the higher electrics fields from the existing SCE 500 kV line. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW. This applies to Configurations G, H, I, and J for Alternative 3.

There are various gas and water pipelines in the corridors of Alternative 3. The transmission lines would produce electrical effects on the pipelines under steady state and fault conditions. This applies to Configurations G, H, I, and J for Alternative 3.The electrical effects can be mitigated through proper transmission line design. as discussed above.

Configuration H
Configuration H conducted for Alternative 3 comprises the BRRTP line, three SCE 500 kV lines, three SCE 69 kV lines, and one SCE 230 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV Double-Circuit Line
- SCE 66 kV Double-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 66 kV Double-Circuit Line
- SCE 66 kV Double-Circuit Line
- SCE 220 kV Single-Circuit Line

The transmission structures for Configuration H are: the BRRTP double circuit lattice 230 kV structure, three lattice 500 kV single circuit structures, three steel monopole 66 kV double circuit structures, and a steel monopole 220 kV single circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration H would be a maximum of 3.9 kV/m within the ROW and 0.16 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration H at the edge of the ROW adjacent to the existing SCE 500 kV transmission line (100 feet from the centerline) is 0.41 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 0.25 kV/m less than the existing corridor. This is due to the higher electrics fields from the existing SCE 220 kV line. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Configuration I
Configuration I conducted for Alternative 3 comprises the BRRTP line, three SCE 500 kV lines, three SCE 69 kV lines, and one SCE 230 kV line. The transmission lines analyzed in this case are as follows:

- Proposed BRRTP 230 kV Double-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 500 kV Single-Circuit Line
- SCE 66 kV Double-Circuit Line
- SCE 220 kV Single-Circuit Line

The transmission structures for Configuration I are: the BRRTP double circuit lattice 230 kV structure, three lattice 500 kV single circuit structures, one lattice 66 kV double circuit structure, and a steel monopole 220 kV single circuit structure. The ROW width for the BRRTP 230 kV line is 200 feet (100 feet from center to edge of the ROW).

The calculated electric fields from Configuration I would be a maximum of 4.0 kV/m within the ROW and 0.13 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration I at the edge of the ROW adjacent to the existing SCE 500 kV transmission line (100 feet from the centerline) is 1.6 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 1.5 kV/m less than the existing corridor. This is due to the higher electrics fields from the existing SCE 500 kV line. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Configuration J
Configuration J conducted for Alternative 3 is in the vicinity of the unincorporated community of Agua Dulce and comprises the following lines:

- Proposed BRRTP 230 kV Double-circuit Line
- Two LADWP 500 kV Single-circuit Lines

The transmission structures for Configuration J are: the lattice 230 kV BRRTP transmission line double-circuit structure; and two three lattice LADWP 500 kV single circuit structures.

The calculated electric fields from Configuration J would be a maximum of 4.0 kV/m within the ROW and 0.12 kV/m at the edge of the ROW (100 feet from the centerline).

The calculated electric field for the existing corridor of Configuration J at the edge of the ROW adjacent to the existing LADWP 500 kV transmission line (100 feet from the centerline) is 1.9 kV/m.

The electric field level at the edge of the ROW for the corridor with the BRRTP 230 kV double circuit line is approximately 1.8 kV/m less than the existing corridor. This is due to the higher electrics fields from the existing LADWP 500 kV line. Even with the addition of the new 230 kV line, the electric field levels are significantly below industry exposure limits.

Appendix M of this Final EIS/EIR (Volume II) depicts the induced currents for some common objects as discussed above that may be within the 230 kV BRRTP ROW or at the edge of the ROW.

There are various gas and water pipelines in the corridors of Alternative 3. The transmission lines would produce electrical effects on the pipelines under steady state and fault conditions. The electrical effects can be mitigated as discussed above.

Summary and Comparison of Alternatives

Table 4.2.12-4 provides a summary comparison of impacts related to electrical effects by Alternative.

TABLE 4.2.12-4. SUMMARY COMPARISON OF IMPACTS: ELECTRICAL EFFECTS

Project Exposure	No Action Alternative	Alternative 1	Alternative 2 (Proposed Action)	Alternative 2a	Alternative 3
Induced Current - Structures	Similar projects would likely traverse the same geographic areas as either the Proposed Action or its action Alternatives. Impacts to the environment from implementation of potential projects would be similar to impacts imposed by the BRRTP.	Same as Alternative 2 for fences underneath the transmission line. At the edge of the ROW, the induced currents in fences would be less than the NESC 5 mA guideline.	The induced currents for large structures (having conductive roofs and or siding) that may be underneath the transmission line or at the edge of the ROW would exceed the NESC 5 mA guideline. A common mitigation technique is to property ground the structure to reduce the induced currents.	Same as Alternative 2.	Same as Alternative 2.
Induced Current - Fences	Same as above	Same as Alternative 2.	The induced currents for long metallic fences that are parallel or approximately parallel to the transmission line corridor that are greater than 1,000 feet in length up to a distance close to and exceeding one mile in length would exceed the NESC 5 mA guideline. A common mitigation technique is to property ground the structure to reduce the induced currents.	Same as Alternative 2.	Same as Alternative 2.
Induced Current – Mobile Objects	Same as above.	Same as Alternative 2.	The induced currents for mobile objects are generally less than the NESC 5 mA guideline within the ROW and at the edge of the ROW. The exception is a truck larger than 40 feet. The only way to mitigate the impact of the large vehicle would be to modify the transmission line clearances.	Same as Alternative 2.	Same as Alternative 2.
Pipelines	Same as above.	There are no pipelines in the corridor.	There are pipelines that parallel the transmission line corridor that may be impacted by the 230 kV transmission line. This is a pre-existing condition as there are existing transmission lines in the corridor. A separate investigation would be required.	Same as Alternative 2.	Same as Alternative 2.
Railway Systems	Same as above.	Same as Alternative 2.	There are two railways systems that cross the reconductoring corridor. There may be impacts to the signal system. This is a pre-existing condition. Otherwise, there are no railroads in this corridor.	Same as Alternative 2.	Same as Alternative 2.

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4.2.13 SOCIAL AND ECONOMIC CONDITIONS

Introduction

This section provides results of how potential impacts associated with the Proposed Action and Alternatives have been assessed regarding socioeconomics. It presents the significance criteria on which impact determinations are based and defines and lists the overall impacts identified for the Proposed Action and Alternatives.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to socioeconomics are addressed in this analysis:

- Property values would decrease with additional transmission lines.

Impact Assessment Methodology

The Project Alternatives have been evaluated with respect to its potential impacts on the socioeconomic environment. Socioeconomic resources that may be affected by construction of the BRRTP include population, housing, employment, income, public services, fiscal conditions, and environmental justice.

Some socioeconomic impacts are typically considered positive impacts. These include additional employment, personal income, and tax revenues provided by a project's economic stimulus. The significance of negative impacts would depend on the assimilative capability of local housing and public services compared to project impacts on population and housing, or, regarding environmental justice, disproportionate negative impacts on low-income or minority populations.

Significance criteria

Few commonly-accepted sensitivity and significance criteria exist by which to measure socioeconomic impacts. Population growth rates exceeding five percent annually are generally viewed as of concern because of potential difficulties in the ability of public services to accommodate such a rapid increase in demand; however, in practice, whether or not public services have existing excess capacity could substantially alter this threshold.

Rental housing vacancy rates under five percent are generally thought to indicate some housing market tightness. Thus, if a project would reduce rental vacancy rates from over five percent to fewer than five percent, the impact could be considered significant. However, this impact could be highly localized and temporary, and therefore may not necessarily be considered significant.

The impacts of a project on fiscal conditions are sometimes considered significant if the project would result in a substantial net fiscal deficit (costs of providing service greater than tax revenues) for local governments.

According to NEPA, an EIS must evaluate social and economic effects of a project if they are related to effects on the natural or physical environment, although social and economic effects alone should not trigger preparation of an EIS. However, NEPA provides no specific thresholds of significance for socioeconomic impact assessment. CEQA guidelines state that economic and social changes resulting from a project shall not be treated as significant effects on the environment. Therefore using previous environmental impact assessments, professional judgment, and local agency policies, eight issues of concern have been identified for identifying potential impacts associated with the Proposed Action and Alternatives.

Potential impacts to socioeconomic and environmental justice issues could occur if the Proposed Action or its Alternatives were to:

1. Affect expenditures or incomes within the Project area;
2. Induce growth or decline of populations and their concentrations;
3. Displace a portion of residences in a community;
4. Create a demand for additional housing that could not be sustained within the Project area;
5. Cause a decrease in Project area or regional employment;
6. Displace or disrupt businesses;
7. Generate public services demands that exceed the providers' capabilities to accommodate them;
8. Cause a disproportionately high and adverse impact on minority or low-income populations; or
9. Cause a substantial change in existing property values.

Operation and Maintenance Impacts

Operation and maintenance of transmission lines and substations typically consist of periodic maintenance of access roads, pruning of vegetation to maintain safe transmission line clearances, testing and repair of structural and electric/electronic components, and visual inspection by vehicle, foot, and aircraft. In the event of system breakdowns, major repair (replacement of wires, towers, or substation equipment) may occur, but these events tend to be extremely rare.

Switching stations are not staffed fulltime. Inspection activities are typically performed system-wide, with rotating inspection over all of LADWPs transmission and station facilities, which include about 7,000 miles of overhead transmission lines (LADWP 2009). Proportionally, therefore, the Project Alternatives would create an addition of about one percent of the overall system transmission length, requiring either only a small fraction of existing staff time for inspection and maintenance, or an unnoticeable increase in staff levels or utilization.

The amount of operation and maintenance effort would be unnoticeable in light of local socioeconomic conditions; therefore operation and maintenance impacts are not discussed in the Impact Analysis Results section below.

Construction Impacts

Unlike operation and maintenance, the construction of the facilities under any of the action Alternatives would involve noticeable workforces and purchases of local goods and services.

This impact, however, would be short-term, lasting only for the term of construction of about two years. The approach used for this impact assessment was to develop a construction schedule, including workforce and local purchases that would be used to construct Alternative 2, the Proposed Action. This construction profile would be used as the vehicle for assessing impacts, intended to be as accurate as possible for the Proposed Action. The socioeconomic impacts of the other action Alternatives were then assessed relative to those of Alternative 2, the Proposed Action. Since Alternative 2 would create the shortest distance of transmission lines, the workforces and local purchases for other action Alternatives would likely resemble slightly increased variants of the Proposed Action workforces and local purchases.

Primary attributes of the Project relevant to the socioeconomic impact assessment are:

- Workforce Requirements
- Wages, salaries, and benefits paid,
- Locally-purchased goods and services used in construction.

LADWP prepared a Summary of Preliminary Design and Impact Models for the Project. The document summarized the conductor information, structure heights and span, as well as auxiliary sites (pulling and tensioning, sleeving, materials staging, etc.) required for the construction and maintenance of a transmission line. The assumptions and results were developed in conceptual construction planning to guide the socioeconomic and other resource impact assessments presented within this Final EIS/EIR.

Detailed socioeconomic results regarding the three primary attributes of the Project listed above as well as the Summary of Preliminary Design information are included within the Socioeconomic Technical Report (Volume III). Results of the impact assessment by Alternative are included below.

Mitigation Planning

Mitigation measures are actions that are above and beyond the required adherence to laws and regulations that would reduce an impact. If a Project-related impact would occur but is sufficiently reduced by the required adherence to laws and regulations, then no mitigation measures should be recommended.

The impact assessment detailed in this section concluded that no substantial adverse impacts on socioeconomics from the Proposed Action and its Alternatives would occur that would require implementation of mitigation measures; or that mitigation measures would assist in reducing impacts from the Project. In the absence of substantial adverse socioeconomic impacts, no mitigation measures are deemed necessary.

Summary of Impact Analysis Results

No Action Alternative

Because there is no action under this Alternative, no construction would occur to achieve the Project objectives. Thus, no impacts on the socioeconomics of the local area from construction or operation would occur.

This Alternative would lessen the ability of LADWP to meet its goal for power delivered from renewable sources by the year 2017.

Alternative 1

Alternative 1 would result in development of 83 miles of transmission line, compared to 61 miles for Alternative 2, the Proposed Action. No construction work force schedule has been developed for Alternative 3, but the direct needs for labor and materials would be likely to be approximately, or potentially less than (due to efficiencies in overhead/management or general scale economies) proportional to its increase in length, or about 36% greater than for the Proposed Action. Since these worker and purchase characteristics are the "drivers" of socioeconomic impacts, the socioeconomic impacts of Alternative 3 would also be up to approximately 36% greater than those described for Alternative 2, the Proposed Action.

This increase would not elevate impacts of Alternative 1 on socioeconomic conditions above thresholds for significance. For example, population impacts for the Project were estimated to be maximums of 87 for Kern County, and 368 for Los Angeles County; increasing these by 36 percent would still constitute imperceptible increases over the total county 2008 populations of 818,000 and 5,026,000.

Similarly, housing impacts would remain minimal. Somewhat higher demand for transient housing could occur during construction since higher labor requirements would likely also entail the need for highly skilled, specialized workers who would be more likely to temporarily relocate locally. Furthermore, the lesser proximity of the Alternative 1 route to population centers of the cities of Lancaster and Palmdale would make access to their supplies of transient housing more difficult, and increase demand for transient accommodations in the western portion of the study area. Thus, increased excess demand for RV and motel accommodations, relative to Alternative 2, could occur.

A slightly greater adverse impact on property tax revenues would be likely to arise from implementation of Alternative 1, relative to Alternative 2. Because the route is 36% longer, about 36% more land and facilities could be unavailable for other uses that could be subject to ad valorem taxation. However, in light of the total volume of property taxes collected by local jurisdictions, this impact would be insignificant. Furthermore, since the wages and local purchases made to construct and operate Alternative 1 facilities would be greater than those for Alternative 2, sales and use taxes from worker purchases, materials purchases, and induced taxable sales would somewhat offset the potential reduction in property taxes.

Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative

The analysis of impacts of the Proposed Action, described in this section, was based on the Project description, which was developed to present a benchmark Project, to which Project Alternative impacts (Alternatives 1, 2a, and 3) could be compared.

Impacts on Employment and Income

Impacts of the Project on employment and income would arise not only from the direct jobs and income provided on-site and in LADWP management/support, but by the purchases of goods and services required to build the Project facilities ("direct from purchases" impacts). These represent the original Project stimulus to the local economies. Furthermore, respending of incomes earned by those selling goods and services for Project construction, and by those selling to Project employees, would recycle through the local economies, creating "ripple effects," comprised of "indirect" (recycling due to firms' supply chains) and "induced" (respending by households) effects. Thus, the total impact of the Project would be a multiple of its original economic stimulus.

Assessing employment impacts is important not just as an appraisal of economic benefits, but because changes in employment often lead to changes in population, as workers may move to an area where jobs are being created, bringing dependents with them.

Economic multipliers are typically used to measure the magnitude of ripple effects, reflecting the ratio of the total impact to the original stimulus. For example, if a project provides 100 jobs, and the total impact, including ripple effects, is 200 jobs in a given area, the multiplier would be 2.0. In general, multipliers would be lower in areas which import higher proportions of their labor, goods, and/or services, because instead of being recycled in the local economy, income is "leaking" out.

Based on the stimuli of the Project detailed in Table 4.2.13-1, the IMPLAN model was run to determine the direct, indirect, and induced impacts of Project construction. Impacts were estimated separately for Los Angeles and Kern counties, for the years 2011 and 2012. The results are shown in Table 4.2.13-1.

TABLE 4.2.13-1. CONSTRUCTION IMPACTS ON EMPLOYMENT AND INCOME (2009 DOLLARS)

	Kern County		Los Angeles County	
	2011	2012	2011	2012
Jobs				
(1)On-site	84	50	92	56
(2)Direct from Project Purchases	35.8	15.7	82.6	46.3
(3)Indirect	5.0	2.0	15.6	8.3
(4)Induced	7.4	2.8	26.1	13.1
Total (2)-(4)	48.2	20.6	124.3	67.7
Total ((1)-(4))	132.2	70.6	216.3	124
Job multiplier[a]	1.57	1.41	2.35	2.21
Income				
(1)Wages Paid to Locally-hired Workers	$911,000	$513,000	$4,516,000	$2,669,000
(2)Direct from Project Purchases	$1,089,420	$412,420	$2,852,877	$1,584,376
(3)Indirect	$217,724	$83,386	$787,473	$475,443
(4)Induced	$250,434	$95,681	$975,288	$556,132
Total (2)-(4)	$1,557,578	$591,487	$4,465,638	$2,615,951

[a]Equal to the Total jobs divided by on-site jobs.

Source: Economic Planning Resources, 2009. Results of analysis using IMPLAN model.

The results of the impact analysis reflect the fact that as a relatively smaller economy, Kern County would experience smaller ripple effects than would Los Angeles County, which is a much larger and diverse economy, with a broader range of consumer and business goods and services. The Project jobs multiplier is shown to be 1.41-1.57 in Kern County, compared to

2.21-2.35 in Los Angeles County (the annual differences reflect different levels of local Project purchases). The multipliers in both counties are higher in 2011 than in 2012 because the relative use of non-labor inputs is estimated to be higher in 2011.

Compared to total baseline 2008 employment at about 330,000 and 4.5 million respectively, in Kern and Los Angeles counties, the total peak increase in employment from Project construction of 132 and 218 jobs would be negligible in either county.

Using a multiplier of 1.4 for Kern County, and 2.2 for Los Angeles County, and the peak Project employment estimates, the possible number of new jobs at peak are estimated as shown in Table 4.2.13-2. Estimated employment impacts total 185 and 182 jobs in 2011 and 2012, respectively, in Kern County, and 403 and 310 jobs respectively, in Los Angeles County.

TABLE 4.2.13-2. TEMPORARY PEAK INCREASES IN EMPLOYMENT

	2011	2012
Jobs multiplier		
Kern County	1.4	1.4
Los Angeles County	2.2	2.2
Average Annual Project-created Employment by County		
Kern County	132	71
Los Angeles County	226	124
Peak Project Site Employment by County		
Kern County	132	130
Los Angeles County	183	141
Peak Induced and Indirect employment		
Kern County	53	52
Los Angeles County	220	169
Total Peak employment		
Kern County	185	182
Los Angeles County	403	310

Source: Economic Planning Resources, 2009. Results of analysis using IMPLAN model.

These estimates use multipliers at the lower range than shown in Table 4.2.13-2, but still may be on the high-side, in part because many firms experience increased demand—especially suppliers for Project direct purchases, and vendors selling directly to construction workers spending on hotels, food, and miscellaneous retail goods—may recognize these temporary nature of the demand, and thus not hire new workers, choosing to increase hours of their existing employees instead. However, this high-side bias is appropriate to the intent of the following sections on population, housing, and public service impacts.

Impacts on Population

Impacts of the Project on population would arise from employment and income generated by the Project, both direct and ripple effects. With the increase of employment, labor supply would have to increase to meet the new demand, by either (1) in-migration, (2) reductions in the local unemployed work force, or (3) inducing persons not previously in the local labor force to begin working.

This analysis assumes that ultimately, the labor demand would be met by increased in-migration. Although the current economic recession may well still have the effect of somewhat high unemployment rates in 2011-2012, by assuming all jobs would ultimately result with in-migration, a slightly high-side bias in the population impact analysis results. This is useful in demonstrating that even under high-side bias, any negative impacts of population increases on housing (crowded housing or insufficient units available) or public services (lack of adequate capacity to serve population increases) would be minor.

The jobs created by the Project were estimated on both annual average and temporary peak bases. Most direct Project jobs on-site would be filled by specialized construction workers, who follow jobs geographically, staying in temporary quarters (hotels, RV parks, or short-term rentals) only for the duration of their jobs. Almost none would be likely to bring dependents, so that long-term population impacts would be zero. The number of these workers shows peaks of 108 and 89 of the Kern County Project site workers in 2011 and 2012 respectively, and 109 and 102 in Los Angeles County. Substantially fewer Project jobs would be taken by persons living in the Study Area at the time of their hire. These persons and their dependents would not constitute increases to local populations.

Jobs created in companies who directly sell to the Project or its workers were estimated in Table 4.2.13-2. These companies are likely to recognize these jobs as temporary due to their direct contact with Project procurement or workers spending their paychecks.

The jobs most likely lead to in-migration by persons who might remain in the area, and concomitant local population increases, would be the jobs identified as indirect and induced impacts. As shown in Table 4.2.13-3, these total to maximums of 19 in Kern County and 83 in Los Angeles County.

TABLE 4.2.13-3. PEAK AND AVERAGE INDIRECT AND INDUCED JOBS SUPPORTED[A]

	Kern County		Los Angeles County	
	2011	2012	2011	2012
Indirect Jobs, Annual Average	5	2	16	8
Peak indirect	8	5	31	25
Induced Jobs, Annual Average	7	3	26	13
Peak induced	12	7	52	33
Total Peak Indirect and Induced Jobs	19	12	83	58
Peak Local Jobs Supported by Locally-hired Project Workers' Direct Spending	9	8	41	41
Total of Peak Jobs Listed Above	29	21	124	99

Footnote: [a] Peak jobs calculated by using ratio of peak-to-average onsite jobs to annual average indirect and induced jobs.
Note: Columns may not add to totals due to rounding.

Workers who migrate to take new jobs sometimes bring with them dependents. Each worker migrating to the area (except transient skilled and supervisory Project construction workers) would establish new households. The average number of persons per household in Kern County in 2000 was 3.03, and in Los Angeles County, 2.98 persons.

The number of dependents in migrating-worker households tends to be substantially less than overall long-term areal household sizes. However, use of the average County household size figures with the total peak-period jobs shown in Table 4.2.13-3 (29 in Kern County and 124 in Los Angeles County) places a maximum bound on the likely population increase due to the Project at 87 for Kern County, and 368 for Los Angeles County. Even these high-side increases would constitute imperceptible increases over the total county 2008 populations of 818,000 and 5,026,000. Even if these entire population increases were to occur in the cities nearest the Project locations in Kern and Los Angeles counties (Tehachapi, California City, Lancaster, Palmdale, Santa Clarita, or Los Angeles), the increases would be minor.

It is further noted that although many in-migrants may choose to remain in the Study Area past the construction period, they would need other sources of income to remain (new jobs, savings, or transfer payments) and would thus not be strictly considered impacts of the Project, but of other actions.

Impacts on Housing

Population increases are not in and of themselves adverse impacts on a community; in fact, they can be beneficial by contributing to its vibrancy and diversity. Adverse impacts of population increases generally can arise from overcrowding of housing or housing rental and purchase price inflation if vacancies cannot accommodate the increase. This section addresses this issue.

As previously noted, increases in population arising due to the Project would consist of (1) transient Project construction workers who remain only for the duration of their jobs, likely staying in hotel/RV parks, and to a lesser extent, in short term rental housing, and (2) workers and their household members who would likely choose market rental or for-sale housing.

Transient construction workers seeking accommodations are likely to choose those closest to their work sites where vacancies exist, and in the communities in which such accommodations are concentrated – cities of Tehachapi and California City, and to a lesser extent the unincorporated communities of Rosamond and Mojave in Kern County, and the cities of Lancaster, Palmdale, Santa Clarita, and the northern part of the city of Los Angeles in Los Angeles County. In general, hotels/motels/RV parks are abundant in these communities, and the recession that began in 2008 has led to general increases in vacancy rates, which at the start of the recession showed some available capacity for demand increases. In the rurally settled center of the Antelope Valley in Kern and Los Angeles County, where the Project would be located, there is little development, virtually no hotel/motel facilities, and minimal RV space, but the more populated communities within a reasonable commute of the Project right-of-way have adequate space to accommodate up to 108 immigrating workers to Kern County, and 109 to Los Angeles County.

Some additional temporary demand for transient accommodations may arise from workers who would be locally-hired but whose residences are in fairly distant locations within the Study Area. To avoid long commutes, these workers may slightly increase the demands quantified above. This additional demand would be small however, because (1) the number of local hires is expected to be small (projected at 13 in Kern County, 58 in Los Angeles County, and (2) those taking such jobs are likely to do so, in part, due to their accessibility via a reasonable commute.

Some seasonal fluctuation in transient accommodation vacancy rates exists in the Study Area, with summers having slightly less capacity than other seasons. In the event of times of tight accommodation availability, workers are likely to pay higher rates, double up on accommodations, or find slightly more distant quarters.

The population seeking rental or for-sale residences are likely to find abundant availability. Comparison of the number of workers who could migrate to the Study Area with the housing vacancy data shows rental vacancies that are substantially above the potential Project impact on demands for renter- or owner-occupied housing.

Impacts on Fiscal Conditions

Unlike most development projects, the Proposed Action would not generate any property taxes for jurisdictions because the Project would be exempt. This is due to provisions in California's constitution, and in its implementing laws, rules, and regulations. Thus, the primary tax revenues generated by the Project would be in the form of retail sales and use taxes from spending of workers' incomes in the local economy.

Article 13, Section 11 of the California Constitution exempts municipal utilities from ad valorem taxation.

> "SEC. 11. (a) Lands owned by a local government that are outside its boundaries, including rights to use or divert water from surface or underground sources and any other interests in lands, are taxable if:
> (1) they are located in Inyo or Mono County and (a) they were assessed for taxation to the local government in Inyo County as of the 1966 lien date, or in Mono County as of the 1967 lien date, whether or not the assessment was valid when made, or (b) they were acquired by the local government subsequent to that lien date and were assessed to a prior owner as of that lien date and each lien date thereafter, or (2) they are located outside Inyo or Mono County and were taxable when acquired by the local government. Improvements owned by a local government that are outside its boundaries are taxable if they were taxable when acquired or were constructed by the local government to replace improvements which were taxable when acquired."

Property Tax Rule 29, in California Administrative Code, Possessory Interests in Taxable Government-Owned Real Property, clarifies this exemption by ensuring that local taxing communities do not lose tax bases when municipal utilities lease or purchase rights-of-way. However, new construction by municipal water or electric utilities is not subject to property taxes.

The LADWP is therefore not liable for property taxes, even for facilities constructed outside its jurisdiction (City of Los Angeles), in the non-official opinion of the Chief, State-Assessed Property Section of the BOE (Thompson 2009). It is possible that upon request of a legal opinion, this area of State law could be clarified, but the case history is fairly clear.

Most development projects generate tax revenues in the form of property taxes, sales and use taxes from re-spending of incomes earned as a result of those projects, and other activities generating license and permit and service fees as well as other miscellaneous sources of local revenues. Such taxes help compensate local jurisdictions for any costs of services associated with servicing land uses and population activity.

The absence of property tax payments to the local counties and cities would remove a large portion of revenues needed by any government to pay for services. However, as described in Section 3.7.1.1, Population, and the preceding Public Services, local impacts on public services, and therefore their capacities and costs, from Project-related population, are expected to be very small. A detailed fiscal assessment was not completed for this analysis, but the impacts, even if slightly negative, would be minor.

Impacts on Property Values

The Proposed Action could affect the value of property through several mechanisms. Its impacts on visual aesthetics might lower the demand for and value of properties that provide unobstructed scenic viewing opportunities. Reductions in demand and value also could materialize for properties sufficiently close to the transmission line that it would trigger concerns associated with health impacts from exposure to EMF or from noise associated with conductors and other electric infrastructure. Temporary impacts on property values could occur during the construction phase because of disturbance from construction activities. Similar permanent impacts could occur because of disturbance from maintenance vehicles and unauthorized use of the roads constructed for the transmission line.

Appraisers, utility consultants, and university researchers have studied property value issues since the 1950s. Studies have either been based on appraisal comparisons of like property proximate or not proximate to transmission lines, attitudinal studies of qualitative perceptions, or statistical analyses using statistical tools on data derived from appraisals and other field study methodologies (Kroll & Priestley, 1992).

Few studies address the impacts on the value of commercial and industrial properties (Kroll and Priestly 1992), but they generally find the impacts are less than the impacts on residential properties. In interviews with appraisers, real estate brokers, and owners and managers of industrial parks, Chapman (2005) found little difference in market prices for commercial and industrial properties with transmission lines nearby compared to those without.

A 2003 Electric Power Research Institute (EPRI) study, "Transmission Lines and Property Values: State of the Science," stated that differences in location and time of data collection, as well as research design, make direct comparisons of results from the various studies very difficult. Although quantitative generalizations from studies cannot be reliably made, the following conclusions from studies seem to be similar across the board (EPRI 2003):

- There is evidence that transmission lines have the potential to decrease nearby property values, but this decrease is usually small.
- Lots adjacent to the ROW often benefit; lots next to adjacent lots often have value reduction.
- Higher-end properties are more likely to experience a reduction in selling price than lower-end properties.

- The degree of opposition to an upgrade project may affect size and duration of the sales-price effects.
- Setback distance, ROW landscaping, shielding of visual and aural effects, and integration of the ROW into the neighborhood can significantly reduce or eliminate the impact of transmission structures on sales prices.
- Although appreciation of property does not appear to be affected, proximity to a transmission line can sometimes result in increased selling times for adjacent properties.
- Sales-price effects are more complex than they have been portrayed in many studies. Even grouping adjacent properties may obscure results.
- Effects of a transmission line on sales prices of properties diminish over time and all but disappear in five years.
- Opinion surveys of property values and transmission lines may not necessarily overstate negative attitudes, but they understate or ignore positive attitudes.

The EPRI (2003) study points out that one of the difficulties in determining the impact on property values is the wide range of methodologies used to measure impacts. It is difficult, if not impossible, to predict the likely impacts on property values of the Project, let alone differences between the Alternative routes. Although the aforementioned discussion applies to new corridors, the entire Proposed Action would be constructed within and adjacent to existing corridors where other transmission lines already exist.

As discussed above, impacts on property values result from visual impacts, or health and safety concerns such as EMF. These issues and potential impacts are assessed in Section 4.2.9 (Visual Resources) and Section 4.2.12 (Electrical Effects). Implementation of mitigation measures in the Visual Resources section would reduce the visual impacts of the Project.

As discussed in Section 3.2.12, there remains a lack of consensus in the scientific community in regard to public health impacts due to EMF at the levels expected from electric power facilities. Further, there are no federal or State standards limiting human exposure to EMFs from transmission lines or substation facilities in California. However, the CPUC has implemented a decision requiring utilities to incorporate "low-cost" or "no-cost" measures for managing EMF from power lines. Although not regulated by the CPUC, LADWP would follow these measures for mitigation of magnetic fields. As such, they would be incorporated into the Project and may help to reduce perceived health effects of transmission lines that would adversely affect property values.

The significance criteria states that the impact would be significant if the project would "cause a substantial decrease in property values." Where Project impacts in other issue areas that can contribute to reduction in property values are less than significant or have been mitigated to less than significant levels, then they would not cause considerable property value changes. Therefore, any associated property value impacts would also be less than significant and no mitigation measure is recommended. It is concluded, then, that the Project would not generate effects that would significantly impact property values in these circumstances.

CEQA Guidelines Section 15131(a) states that economic or social effects of a project shall not be treated as significant effects on the environment, and these effects only need to be considered in a chain of cause and effect if the economic or social changes would result in a physical change to the environment . As concluded above, any decrease in property values would be less than significant, and likewise, there would be no or less than significant resulting physical changes in the environment.

It should be noted that landowners of any private parcels that would be crossed by the Project would be compensated by LADWP for use of its easement across the property based on the fair market value of the property taken. Due to the public nature of the BLM and USFS lands traversed by the Project, property value impacts would not apply to BLM and USFS lands.

Alternative 2a

Alternative 2a would be very similar to Alternative 2, the Proposed Action, with the Green Valley Re-route increasing its length by only two miles. This re-route, even accompanied by additional helicopter construction, would result in a construction schedule and demand for workers and local materials that would be almost the same as discussed in Workforce Requirements above. Since these worker and purchase characteristics are the “drivers” of socioeconomic impacts, the socioeconomic impacts of Alternative 2a would be nearly identical to those described for Alternative 2, the Proposed Action.

Alternative 3

Alternative 3 would result in development of 76 miles of transmission line, compared to 61 miles for Alternative 2, the Proposed Action. No construction work force schedule has been developed for Alternative 3, but the direct needs for labor and materials would be likely to be approximately, or potentially less than (due to efficiencies in overhead/management or general scale economies) proportional to its increase in length, or about 25% greater than for the Project, discussed in Workforce Requirements above. Since these worker and purchase characteristics are the “drivers” of socioeconomic impacts, the socioeconomic impacts of Alternative 3 would also be up to approximately 25% greater than those described for Alternative 2, the Proposed Action.

This increase would not elevate impacts of Alternative 3 on socioeconomic conditions above thresholds for significance. For example, population impacts for the Project were estimated to be maximums of 87 for Kern County, and 368 for Los Angeles County; increasing these by 25 percent would still constitute imperceptible increases over the total county 2008 populations of 818,000 and 5,026,000.

Similarly, housing impacts would remain minimal. Slightly higher demand for transient housing could occur during construction since higher labor requirements would likely also entail the need for highly-skilled, specialized workers who would be more likely to temporarily relocate locally. However, the better proximity of the Alternative 3 route to population centers of the cities of Lancaster and Palmdale would mean easier access to the abundant supplies of transient housing in these areas. Thus, increased demand would be likely to be met with the larger conveniently available supply of RV and motel accommodations, relative to Alternative 2. Additionally, while the removal of seven single family homes, as identified in the Land Use impact analysis, would result from the implementation of this Alternative, it is expected that the small number of displaced residents would be able to relocate within the same general area with minimal impacts to housing supply.

A slightly greater adverse impact on property tax revenues would be likely to arise from implementation of Alternative 3, relative to Alternative 2. Because the route is 25% longer, about 25% more land and facilities could be unavailable for other uses that could be subject to ad valorem taxation. However, in light of the total volume of property taxes collected by local jurisdictions, this impact would be insignificant. Furthermore, since the wages and local purchases made to construct and operate Alternative 3 facilities would be greater than those for Alternative 2, sales and use taxes from worker purchases, materials purchases, and induced taxable sales would somewhat offset the potential reduction in property taxes.

Environmental Justice

Per Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," a detailed analysis of Environmental Justice issues as related to the Proposed Action and Alternatives is contained in Chapter 6, Section 6.6.12.

4.3 NATURAL ENVIRONMENT

4.3.1 BIOLOGICAL RESOURCES

Introduction

An impact assessment was conducted to define the various levels of potential impacts that could occur for each Project component. The impact assessment combines several facets that collectively define the value of natural biotic communities and subjects those facets to various impact features to predict impact magnitude. Impacts to wildlife would result from actions that alter wildlife habitats. Three areas are the focus of this analysis: habitat change, habitat fragmentation, and disturbance. Alteration may occur through direct habitat loss via surface disturbance or indirectly through the reduction in habitat quality such as increased noise levels or the presence of anthropogenic structures. Both the direct and indirect impacts of transmission line development are associated with ground disturbances caused by constructing road networks for access, and installation of towers, conductors, substations, other associated infrastructure, and ongoing maintenance. All the biological data collected within the study area was mapped and an impact assessment and mitigation planning procedure was developed.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to biological resources are addressed in this analysis:

- Potential direct, indirect, and cumulative impacts to rare, threatened, endangered, and special status species and habitats. Of particular concern were wildlife movements and migration paths

- Potential impacts to Riparian Conservation Areas throughout the forest lands, and the potential impacts of long-term maintenance plans for the access roads on these and other sensitive areas
- Spread of invasive plant species (including noxious weeds) during the construction process of the Project, in addition to trash and micro-trash generated during construction, the effects of construction and maintenance noise on sensitive species, and increased illegal hunting and plant-collecting activity due to construction
- Habitat change as a result of the Project to address impacts to threatened and endangered species and management indicator species
- Potential increased raptor predation of sensitive species due to the use of lattice towers

Impact Assessment Methodology

To qualitatively define the various levels of potential impacts likely to occur along a given Alternative, a sensitivity analysis (POWER 2011; see Biological Resources Technical Report, Volume IV of this Final EIS/EIR), significance criteria, and impact types were assessed for each Alternative. The Project is expected to create short-term construction-related impacts, and long-term or permanent displacement from the new transmission towers and roads. Impacts to biological resources inventoried were evaluated considering the following factors:

- Sensitivity levels (e.g., occurrence of affected biological resource areas) (POWER 2011; see Biological Resources Technical Report, Volume IV of this Final EIS/EIR);
- Habitat quality;
- Habitat quantity (i.e., quantity of habitat that could potentially be disturbed or removed due to construction and maintenance);
- Duration of Project activities (i.e., construction, operation, maintenance, and decommissioning related activities);
- Access level category (level of impact expected from ground disturbance);
- Helicopter construction;
- Significance level (CEQA and NEPA guidelines); and
- Mitigation measures to reduce initial impact levels.

The potential effects of the Proposed Action and Alternatives have been categorized as either “High,” “Moderate” (when the actual outcome of an impact would be influenced by presently unknown or undetermined factors), or “Low.”

High Impact – Impacts which could potentially cause adverse unavoidable harm (injure or kill) or stress to wildlife and/or vegetation. “Stress” is defined as actions that would potentially remove or destroy habitat, or displace or otherwise influence the species.

Moderate Impact – Impacts which could potentially cause some stress to wildlife and/or vegetation.

Low Impact – Impacts which could potentially cause little detectable stress to wildlife and/or vegetation.

This impact assessment served as the basis for which initial impact levels, impact types, descriptions of impacts, recommended mitigation and their effectiveness, and residual impacts were outlined for each mile of the Alternative corridors (POWER 2011; see Biological Resources Technical Report in Volume IV of this Final EIS/EIR).

In addition to General Practices (GPs), specific mitigation measures are proposed to reduce impacts to biological resources that would not be minimized or mitigated by implementation of GPs. The GPs described in this Final EIS/EIR are preliminary measures that are part of the Project description. Section 7 formal consultation with the USFWS would occur for the Project and additional mitigation measures may be added or revised based on that consultation.

Significance Criteria

California Environmental Quality Act (CEQA) significance thresholds were based on regulatory guidance and requirements. A significant impact is defined as "a substantial or potentially substantial, adverse change in the environment" (CEQA Section 21068). Several sources were used to determine the significance criteria, including the CEQA Guidelines, National Environmental Policy Act (NEPA), and recent EIS/EIRs that have been certified in Los Angeles County and Kern County. The potential impacts were evaluated relative to the standards of significance described below.

The following significance criteria are based on the CEQA environmental checklist presented in Appendix G of the CEQA Statutes and Guidelines and are used to describe the potential impacts of the Proposed Action and Alternatives on the sensitive biological resources that may occur in the Project area. A project would have a significant impact on biological resources if it would result in one or more of the following:

- Have a substantial adverse effect on any riparian habitat, including Riparian Conservation Areas (RCAs) or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFG, USFS, BLM, or USFWS;
- Have an adverse effect, either directly or through habitat modifications, on any species listed as endangered, threatened, or proposed, or critical habitat for these species;
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, regulations, or by CDFG, USFS, BLM, or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Expected significant impacts include disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation, and decrease in habitat quality. The environmental baseline for NEPA (40 CFR 1508.27) includes the following significance criteria:

- Likelihood of occurrence (low, slight, moderate, high, certain)
- Direction and magnitude (positive, neutral, negative; low, moderate, heavy, severe)
- Distribution (areal extent or volume covered)
- Duration (temporary or permanent, intermediate or continuous)
- Reversibility (yes, somewhat, no)
- Mitigation potential
- Timing
- Geographic scale (local, regional, national, and global)

Mitigation Planning

GPs (see Chapter 2) would be incorporated into Project construction plans (POD, COM Plan) that would directly and indirectly benefit biological resources and reduce impacts. In addition to Project GPs, specific mitigation measures are proposed to reduce impacts to biological resources (Table 4.3.1-1). The biological mitigation measures listed below would also be incorporated into the POD. For a detailed discussion of the biological resource mitigation measures refer to the Biological Resource Technical Report Volume IV of this Final EIS/EIR. The effectiveness of the mitigation planning would be measured by monitoring the success of the measure and adaptive management. The goal is to create an accountable system for tracking and reporting both quantitative and qualitative measures of the mitigation effort.

TABLE 4.3.1-1. MITIGATION MEASURES – BIOLOGICAL RESOURCES

Mitigation Measure	Description
BIO-1	*Provide restoration/compensation for impacted sensitive vegetation communities.* 1a. The intent of this mitigation measure is to require LADWP to restore disturbed sites to pre-construction conditions or the desired future conditions per the Angeles National Forest (ANF) Land Management Plan (LMP). Before construction LADWP shall have a qualified biologist, where concurrence on the biologist has been provided by the USFS and approval on the biologist has been provided by the BLM, document the community type and acreage of vegetation that would be subject to Project disturbance. Impacts to all oaks and native trees will be documented by identifying the species, number, location, and diameter at breast height (DBH). On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. 1) For NFS and BLM lands, the USFS and BLM shall review and approve a Habitat Restoration and Revegetation Plan, prepared by LADWP in coordination with the federal agencies, for the Project, which shall include plans for restoration, enhancement/re-vegetation and/or mitigation banking. For non-federal lands, LADWP shall prepare the Habitat Restoration and Revegetation Plan. Both plans shall include at minimum: (a) the location of the mitigation site (off-site mitigation may be required); (b) locations and details for topsoil storage; (c) the plant species to be used; (d) seed and cutting collecting guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology for container, bare-root or other planting needing irrigation; (g) measures to control exotic vegetation on site; (h) success criteria; (i) a detailed monitoring program;(j) locations and impacts to all oaks and native trees (over 3 inches DBH); (k) locations of temporary or permanent gates, barricades, law enforcement patrolling, or other means to

Mitigation Measure	Description
	control unauthorized vehicle access on access and spur roads as deemed necessary by the USFS and BLM (NFS and BLM lands only). Restoration efforts will not adversely affect listed species or critical habitat and measures will be implemented to protect these species during restoration. 2) LADWP shall utilize a USFS/BLM approved locally collected seed mix, locally collected cuttings, bare-root stock, etc. to revegetate areas disturbed by construction activities. All areas dominated by non-native species before Project disturbance shall be revegetated using appropriate native species. The seed mix shall consist of native, locally occurring species collected from local seed sources. Cuttings and bare-root stock shall be of local origin. Restoration shall include the revegetation of stripped or exposed work sites and/or areas to be mitigated with vegetation native to the area. No commercially purchased seeds, stock, etc. will be accepted without the approval of the USFS and BLM on NFS/BLM lands, and seeds must be certified to be free of noxious weeds. Revegetation shall include ground cover, grass, shrub, and tree species to match disturbed areas to surrounding conditions and to restore or improve wildlife habitat quality to pre-Project or higher levels. The Habitat Restoration and Revegetation Plan shall also include a monitoring element. Post seeding and planting monitoring reporting will be yearly from years one to five and every other year from years six to ten or until the success criteria are met. LADWP shall restore temporarily disturbed areas, including existing tower locations that are to be removed by the Project, to pre-construction conditions or the desired future conditions per the ANF LMP. If the survival and cover requirements have not been met, LADWP is responsible for replacement planting to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements as previously mentioned. 3) On NFS land, the USFS/LADWP will conduct a preconstruction evaluation of the probable impacts to all oaks and native trees (over 3 inches DBH) in all construction-related disturbance areas. This evaluation shall be incorporated into the Habitat Restoration Plan and shall include the species and number of individuals, their DBH, location, and potential impact type. Construction within the driplines of all native trees and oak trees/shrubs, and incidental trimming or damage to trees along the proposed access/spur routes, shall not occur until the trees are evaluated by a USFS botanist or authorized arborist. This person shall identify appropriate measures to minimize tree loss, such as the placement of fence around the dripline, padding vehicles, minimizing soil removal or adding spoil around driplines, and the placement of matting under the existing dripline during construction activities. On the ANF, if a tree must have any construction-related activities such as equipment or soil staging within the drip zone, root pruning, or excessive branch pruning (greater than 25% in one year), then the tree must be monitored for five years for tree mortality. If any of these identified trees dies during the monitoring period, then the tree must be replaced at the rate appropriate to the DBH. 4) The replacement ratios (using rooted plants in liners or direct planting of acorns [for oaks]) for native trees or any oaks that are to be removed on the ANF shall be as follows: trees from 3 to 5 inches DBH shall be replaced at 3:1; trees from 5 to 12 inches shall be replaced at 5:1; trees from 12 to 24 inches shall be replaced at 10:1; trees from 24 to 36 inches shall be replaced at 15:1; and all oaks greater than 36 inches shall be replanted at a ratio of 20:1. The replacement ratio for damaged trees shall be 2:1 for trees with DBH less than 12 inches and a 5:1 ratio for trees with DBH greater than 12 inches. The DBHs for scrub oaks will be measured following California Department of Fish and Game (CDFG) guidelines. On the ANF, any oak or native tree that must be removed or killed as a result of construction or other Project-related activities shall be replaced in kind or mitigated (off-site) at a comparable value. Compliance shall be evaluated annually for years one to five and bi-annually for years six to ten (years after tree planting). Trees shall be planted at locations acceptable to the landowner or managing agency. All planting locations, procedures, and results shall be evaluated by an authorized arborist and USFS botanist. On non-federal lands, all protection and replacement measures shall be consistent with applicable local jurisdiction requirements, such as the Los Angeles County Oak Tree Ordinance. 5) Permanent impacts on federal lands shall be determined by the appropriate federal manager (USFS and BLM) at the ratios stated below (Table BIO-MM-1) or at a comparable value. On NFS and BLM lands, impacts will be considered permanent if the trees are not likely to recover by ten years post-disturbance. Where on-site restoration is planned for mitigation of temporary impacts to vegetation communities, LADWP shall identify a Habitat Restoration Specialist, where concurrence has been provided by the USFS, to implement the method of restoration outlined by the USFS/BLM in the Habitat Restoration Plan. 6) On USFS/BLM lands, the creation or restoration of habitat shall be monitored after mitigation site construction to assess progress and identify potential problems with the restoration site. This will be

Mitigation Measure	Description
	monitored on USFS/BLM lands until the success criteria outlined in the restoration plan are met annually for years one to five, and bi-annually for years six to ten. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken until the success criteria are met as specified above, to ensure the success of the restoration effort. If the mitigation fails to meet the established success criteria after the ten-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the ten-year period until the criteria are met or unless otherwise specified by the USFS/BLM (as appropriate). If a fire occurs in a revegetation area before the success criteria are met, LADWP shall be responsible for a one-time replacement of vegetation. If a second fire occurs, no replanting is required, unless the fire is caused by LADWP activity. Off-site mitigation for NFS/BLM and non-NFS/BLM lands may be required if mitigation rates exceed what can be achieved on NFS/BLM land. This may be in the form of funding for land acquisition for inclusion into the Angeles National Forest or BLM lands affected by the Project, mitigation banking, removing existing structures, or comparable restoration efforts. **1b.** During and after construction, USFS/BLM-identified potential or existing entrances to Project-related disturbed areas such as access/spur roads, pull sites, staging areas, fly yards, landing zones, etc. on NFS/BLM lands shall be gated, blockaded and/or concealed in some manner and maintained to prevent the unauthorized use by the general public. Signs prohibiting unauthorized use of these disturbance areas shall be posted on these barricades if deemed necessary by the USFS/BLM. If barricades are being compromised, law enforcement patrolling may also be implemented to control unauthorized access onto Project disturbance areas. **1c. Treat cut tree stumps with Sporax.** All stumps of trees (conifers and hardwoods) resulting from activities associated with construction of the Project shall be treated with Sporax according to product directions to prevent the spread of annosus root disease. Only licensed applicators shall apply Sporax. Sporax shall not be used during rain events unless otherwise approved by the USFS.

TABLE BIO-MM-1. SUMMARY OF ESTIMATED IMPACTS TO VEGETATION COMMUNITIES ON FEDERAL LANDS

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Alternative 1								
Chamise Chaparral	USFS	16.73	3:1	50.19	56.06	1:1	56.06	106.25
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.30
Riversidian Sage Scrub	USFS	3.06	5:1	15.3	10.48	2:1	20.96	36.26
Southern Coast Live Oak Riparian Forest	USFS	0.05	5:1	0.25	0.38	2:1	0.76	1.01
Southern Cottonwood Willow Riparian Forest	USFS	0.42	5:1	2.1	0.86	2:1	1.72	3.82
Southern Mixed Chaparral	USFS	14.13	3:1	42.39	45.81	1:1	45.81	88.20
Southern Sycamore Alder Riparian Woodland	USFS	0.13	5:1	0.65	0.25	2:1	0.5	1.15
Southern Willow Scrub	USFS	0.32	3:1	0.96	1.30	2:1	2.6	3.56
Alternative 2								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Barren/developed	USFS	7.8	1:1	7.8	24.8	1:1	24.8	32.6
Mojave Creosote Bush Scrub	BLM	2.69	1:1	2.69	21.82	1:1	21.82	24.51
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.06	1:1	2.06	2.31
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.39	2:1	6.78	10.23
Southern Mixed Chaparral	USFS	3.24	3:1	9.72	8.77	1:1	8.77	18.49
Southern Riparian Scrub	USFS	0.33	3:1	0.99	0.66	1:1	0.66	1.65

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Southern Sycamore Alder Riparian Woodland	USFS	0.87	5:1	4.35	2.2	2:1	4.4	8.75
Alternative 2a								
Chamise Chaparral	USFS	10.11	3:1	30.33	39.38	1:1	39.38	69.71
Barren/developed	USFS	3.24	1:1	3.24	12.72	1:1	12.72	15.96
Interior Live Oak Chaparral	USFS	2.06	5:1	10.3	5.60	2:1	11.2	21.5
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	1.84	5:1	9.2	8.85	2:1	17.7	26.9
Scrub Oak Chaparral	USFS	1.46	5:1	7.3	3.19	2:1	6.38	13.68
Southern Coast Live Oak Riparian Forest	USFS	0.69	5:1	3.45	3.40	2:1	6.8	10.25
Southern Mixed Chaparral	USFS	9.03	3:1	27.09	27.88	1:1	27.88	54.97
Southern Riparian Scrub	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland	USFS	0.81	5:1	4.05	1.64	2:1	3.28	7.33
Alternative 3								
Chamise Chaparral	BLM	0.00	1:1	0.0	0.02	1:1	0.02	0.02
Barren/developed	USFS	1.04	1:1	1.04	2.13	1:1	2.13	3.17
Mojave Creosote Bush Scrub	BLM	2.68	1:1	2.68	21.81	1:1	21.81	24.49
Mojave Wash Scrub	BLM	0.25	1:1	0.25	2.05	1:1	2.05	2.3
Riversidian Sage Scrub	USFS	9.57	5:1	47.85	28.19	2:1	56.38	104.23
Scrub Oak Chaparral	USFS	2.87	5:1	14.35	5.83	2:1	11.66	26.01
Southern Riparian Scrub	USFS	0.34	5:1	1.7	0.69	2:1	1.38	3.08
New Circuit								
Chamise Chaparral	USFS	8.03	3:1	24.09	23.05	1:1	23.05	47.14
Riversidian Sage Scrub	BLM	0.04	1:1	0.04	0.34	1:1	0.34	0.38
Riversidian Sage Scrub	USFS	1.98	5:1	9.9	5.96	2:1	11.92	21.82
Southern Coast Live Oak Riparian Forest	USFS	0.08	5:1	0.4	0.66	2:1	1.32	1.72
Southern Cottonwood Willow Riparian Forest	USFS	0.40	5:1	2.0	0.80	2:1	1.6	3.6
Southern Sycamore Alder Riparian Woodland	USFS	0.09	5:1	0.45	0.19	2:1	0.38	0.83
Reconductoring								
Chamise Chaparral (Segment ABG)	USFS	16.07	3:1	48.21	32.65	1:1	32.65	80.86
Barren/developed (Segment ABG)	USFS	7.77	1:1	7.77	25.28	1:1	25.28	33.05
Mojave Creosote Bush Scrub (Segment ABG)	BLM	2.85	1:1	2.85	23.16	1:1	23.16	26.01
Mojave Wash Scrub (Segment ABG)	BLM	0.23	1:1	0.23	1.86	1:1	1.86	2.09
Riversidian Sage Scrub (Segment ABG)	USFS	5.07	5:1	25.35	10.30	2:1	20.6	45.95
Southern Coast Live Oak Riparian Forest (Segment ABG)	USFS	3.25	5:1	16.25	6.60	2:1	13.2	29.45
Southern Mixed Chaparral (Segment ABG)	USFS	2.86	3:1	8.58	8.01	1:1	8.01	16.59
Southern Riparian Scrub (Segment ABG)	USFS	0.33	5:1	1.65	0.66	2:1	1.32	2.97
Southern Sycamore Alder Riparian Woodland (Segment ABG)	USFS	0.95	5:1	4.75	2.34	2:1	4.68	9.43

Vegetation Communities	Jurisdiction	Permanent Impacts (acres)			Temporary Impact (acres)			Total Estimated Mitigation (acres)
		Estimated Impact	Ratio	Estimated Off-site Mitigation	Estimated Impact	Ratio	Estimated On-site Restoration	
Southern Coast Live Oak Riparian Forest (Segment K)	BLM	0.02	1:1	0.02	0.04	1:1	0.04	0.06
Southern Mixed Chaparral (Segment K)	BLM	0.00	1:1	0.0	0.01	1:1	0.01	0.01

Note: The permanent and temporary impact calculations provided above are estimates based on the impact model described in Appendix C of the Biological Resources Technical Report. Therefore, acreage numbers for the habitat types listed above may be smaller than those listed in the table. Preconstruction surveys will be conducted to estimate the acreage impacts and will be based on the final design not the impact model.

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BIO-2	*The following prescriptions would prevent the spread of invasive weeds into previously uninfested areas in the designated construction right-of-way.* 2a **Prepare and implement a Weed Control Plan.** LADWP/ANF/BLM shall prepare and implement a comprehensive, adaptive Weed Control Plan on NFS/BLM lands for pre-construction and construction invasive weed abatement. The Weed Control Plan, including monitoring and eradication, will be part of the 50 year Operations and Maintenance Permit. On ROW easement lands administered by the USFS/BLM, the Weed Control Plan shall incorporate all appropriate and legal agency-stipulated regulations including consulting with CDFG on CESA species. The Weed Control Plan shall be submitted to the USFS/BLM for final authorization of weed control methods, practices, and timing before implementation of the Weed Control Plan on public lands. Weed control on BLM lands using pesticides would require site-specific NEPA analysis and an approved BLM Pesticide Use Permit. Pesticide Use Permits are issued for a maximum of three years. ROW easements on private lands shall include provisions such as wheel and equipment washing as part of implementation of the Weed Control Plan. The Weed Control Plan shall include the following stipulations: 1) A pre-construction weed inventory shall be conducted on NFS and BLM lands by surveying all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new or improved access and spur roads. Weed populations that: (1) are rated High or Moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006); (2) aid and promote the spread of wildfires (such as cheatgrass, Saharan mustard, and medusa head); and (3) are considered by the USFS and/or BLM as species of priority (for NFS/BLM lands only) shall be mapped and described according to density and area covered. In areas subject to ground disturbance, weed infestations shall be treated before construction according to control methods and practices for invasive weed populations designed in consultation with the USFS/BLM. The Weed Control Plan shall be updated and guide post-construction eradication and monitoring efforts. 2) Weed control treatments shall include all legally permitted herbicide application, manual, and mechanical methods applied with the authorization of the USFS/BLM. The application of herbicides shall be in compliance with all State and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the USFS/BLM, and implemented by a Licensed Qualified Applicator. The most effective herbicides with the least toxic surfactant available shall be used. Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event. Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used. Herbicides shall not be applied by spray equipment when wind velocities exceed 6 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at wind speeds over 15 mph. In areas containing special-status plants or animals, there will be a 5- to 70-foot buffer where herbicides are not used. The size of the buffer will be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of adjacent native species, herbicide being used, method of herbicide application, concentration of herbicide being used based on no observed effect to non-target species, and/or environmental conditions and terrain. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling

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	populations before they start producing seeds. Pre-emergent herbicides will only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an authorized botanist.
	For the preconstruction and construction of the Project, measures to control the introduction and spread of noxious weeds in the Project work area shall be taken as follows.
	3) On the ANF and BLM lands, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (tower pads, staging areas, landing zones, etc.), including access/spur roads disturbed during the Project. Surveying and monitoring for weed infestations shall occur annually for years one to five and bi-annually for years six to ten, or until success criteria as outlined in the Weed Control Plan are met. Treatment of all identified weed populations shall occur at an appropriate interval so as to meet the success criteria. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that site.
	4) During Project preconstruction and construction, all seeds and straw materials shall be weed-free when available, and all gravel and fill material shall be certified weed-free by the county Agriculture Commissioners' Offices. Any deviation from this must be approved by a USFS/BLM botanist. All plant materials used during restoration shall be native, certified weed-free, and approved by the USFS/BLM.
	5) Before beginning preconstruction activities, the USFS and the BLM, in coordination with LADWP, will determine suitable locations to install field washing stations as part of the Weed Control Plan. Before commencing construction activities, LADWP shall document that all vehicles, equipment, and tools used on the Project have been cleaned at existing construction yard wash facilities or legally operating car washes. This is a one-time requirement designed to address the potential of new species of weeds being transported from outside the area. If, however, vehicles, equipment, or tools are used or driven off paved roads on non-NFS/BLM lands, washing must occur before entering USFS/BLM lands. During Project preconstruction and construction, all vehicles, equipment, or tools which will be used outside of permitted Project roadways shall be washed at the nearest wash station before operating off-road. In other areas also designated by the USFS/BLM, vehicles, equipment, and tools will be washed at the nearest wash station after exiting those areas. Vehicles that do not leave permitted Project roadways are not required to be washed after the initial washing described above. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the USFS/BLM. For NFS lands, plant material may also be removed by air compressors at USFS botanist/LADWP-approved locations. Written daily logs shall be kept for all vehicle/equipment/tool washing that records the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the USFS and BLM for inspection at any time and shall be submitted to the USFS and BLM permit administrators on a monthly basis.
	6) During Project operation and maintenance activities, weeds shall be removed in assembly yards, helicopter landing areas, tower pads, spur roads, staging areas, and any other disturbance areas in a USFS/BLM-approved method.
	2b Remove weed seed sources from construction access routes. Before construction, LADWP shall initiate invasive species eradication along construction access routes to minimize the potential of weeds spreading aggressively during construction. Post-construction, these treatment areas will be included and treated according to the restoration plan. Per the Forest Service Manual (FSM) 2080 Best Management Practice (BMP) guideline, LADWP shall also remove or reduce sources of weed seed along the travel routes associated with Project construction. Weed species identified along the Alternatives and associated access roads include tocalote, artichoke thistle, tree tobacco, saltcedar, slender wild oat/wild oat, ripgut brome, soft chess brome, red brome, cheatgrass, blessed thistle, filaree, shortpod mustard, prickly lettuce, common horehound, yellow sweetclover, rabbit foot grass, Mediterranean grass, sowthistle, rat-tail fescue, tree-of-heaven, giant reed grass, yellow starthistle, bull thistle, fennel, perennial pepperweed, and black locust.. To prevent the introduction or control the spread of invasive weeds, herbicide, hand removal or other control methods will be implemented to reduce seed production during Project construction. Following Project approval and during the time of year when weed species can be observed and identified, LADWP shall identify, using an

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	authorized plant ecologist, any other weed seed sources that could contribute to Project-related weed spread on the ANF and BLM lands. Target infestations identified by Project surveys should be controlled before construction. LADWP shall initiate eradication of the target infestations discovered during pre-construction surveys along construction routes. 2c **Remove weed seed sources from assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads.** Before construction and during each year of construction at all assembly yards, staging areas, tower pads, pull sites, landing zones, and spur roads within the ANF and BLM lands, weed-infested areas shall be hand-weeded and/or treated as appropriate for the individual weed species under the guidance of an authorized plant ecologist or restoration ecologist, where concurrence on the ecologist has been provided by the USFS/BLM. Unless otherwise authorized by the USFS/BLM, weed control efforts in these areas shall be timed annually to reduce shortpod mustard, tocalote, bromes and other invasive weed seed production, by herbicide application or other control techniques prior to flowering. All plant debris shall be disposed of at a USFS/BLM approved location. Weed control efforts shall commence in early spring (February – March), as indicated annually by an authorized plant ecologist or restoration ecologist in coordination with LADWP and USFS/BLM botanist or weed specialist. 2d **Use of Herbicides to Control Exotic Weeds.** LADWP may use herbicides where deemed necessary for the control of invasive weeds within the Project area. Weed control shall be species-specific, and herbicides shall be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for the particular weed species. To minimize potential impacts, weed control treatments shall include all legally permitted herbicide, manual, and mechanical methods applied with the authorization of the USFS/BLM. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a different follow-up treatment method after the initial removal occurs. Any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel and in coordination with LADWP. On BLM lands, herbicide use will be guided by an approved, site-specific Pesticide Use Proposal.
BIO-3	*Incorporate riparian area avoidance and permit measures.* The following actions and all permit conditions detailed within the U.S. Army Corps of Engineers individual or Nationwide 12 permit, CDFG 1602 Streambed Alteration Agreement, and RWQCB 401 water quality certification (subject to separate approval) would be implemented by the construction manager and environmental compliance monitor(s). 3a Vegetation removal or road construction shall not occur in RCAs during the breeding season for nesting birds (February 1 to August 15) unless otherwise approved by the USFS. LADWP shall prepare and implement a USFS RCA Treatment Plan for the Project. This Plan shall include the specific activities that will occur at each of the RCA points crossed by the Project, including the amount and type of vegetation to be cleared, the type of road crossing or improvement allowed for wet and dry crossings, and the methods that would be employed to reduce the effects of the Project on water quality. The Plan shall include seasonal restrictions for vehicle or equipment passage, restrictions on what activities may occur (such as grading, vegetation removal or tree trimming), monitoring requirements, and restoration requirements. This Plan shall be submitted to the USFS for approval before construction or the grading of any access road. 3b Before construction, an authorized biologist shall stake and flag or fence exclusion zones around all identified riparian areas. Such exclusion zones will include an appropriate buffer to preclude sediment intrusion into the riparian areas. Earth-moving activities shall be restricted from these zones, although essential vehicle operation and foot travel will be permitted on existing roads, bridges, and crossings. All other construction activities, vehicle operation, material and equipment storage, and other surface-disturbing activities will be prohibited within the exclusion zone. 3c In areas where riparian habitats are unavoidable, the construction manager, in consultation with the lead environmental compliance inspector and USFS, shall narrow the width of the road through the area to the minimum extent required for safe travel. New spur roads and existing access road improvements shall be constructed and implemented using methodology that preserves existing hydrology. 3d Towers shall not be constructed in riparian areas. 3e All temporarily disturbed riparian areas that would not be utilized for future routine operation and maintenance activities shall be restored according to the guidelines of the Habitat Restoration Plan to the extent required to ensure no net loss of habitat functions and values. Following construction activities, the areas will be restored

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	as soon as practicable. **3f** Permanent, unavoidable losses of riparian areas will be mitigated by restoration and/or preservation of off-site habitats, as outlined in the Habitat Restoration Plan. The final mitigation and off-site restoration locations will be determined in consultation with LADWP and the relevant permitting agency(s). Mitigation acreage ratios will be consistent with those listed in Table BIO-MM-1.
BIO-4	*Provide restoration/compensation for affected jurisdictional areas.* **4a** Impacts to areas under jurisdiction of the USACE, RWQCB, USFS and CDFG shall be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible, including emergency repairs, and access/spur roads within RCAs, the applicant shall provide the necessary mitigation required as part of wetland permitting. This will include creation, restoration, and/or preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of jurisdictional area mitigation. The location(s) of the mitigation will be determined in consultation with LADWP and the responsible agency(s) as part of the wetland permitting process. **4b** Measures 3a, b, c, and d will also be incorporated to avoid and protect jurisdictional areas.
BIO-5	*Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife.* **5a.** Conduct preconstruction surveys in locations where potential habitat exists for special-status species to avoid impacts during construction. If wildlife sign or habitat is detected during the surveys, construction activities will be monitored by authorized biologists, or exclusion fencing will be placed around work areas. If federally listed species are found within the area of potential effect, the authorized biologist shall notify the construction manager and the USFWS. The construction manager, in consultation with the USFWS and the authorized biologist, will have the authority to halt all activities until appropriate avoidance measures have been completed. If non-federal special-status species are found within the area of potential effect, the USFS, BLM, and CDFG will be notified and, in consultation with these agencies, agreed-upon appropriate actions to address impacts to the species will be implemented. This only applies to species that are not listed under the California Endangered Species Act (CESA) unless authorized by an Incidental Take Permit (ITP) or not fully protected under Fish and Game Code or Title 14, California Code of Regulations (CCR). **5b.** Cover all steep-walled trenches or excavations used during construction to prevent entrapment of wildlife (e.g., reptiles and small mammals). If the trenches or excavations cannot be covered, escape ramps shall be placed into the trench or excavated area, or exclusion fencing (i.e., silt fencing) shall be installed around the trench or excavation to prevent entrapment of wildlife. Open trenches, or other excavations that could entrap wildlife, shall be inspected by the authorized biologists a minimum of three times per day and immediately before backfilling. All excavated areas shall be covered if left overnight. Furthermore, employees and contractors shall look under vehicles and equipment for the presence of wildlife before moving the vehicle or equipment. If wildlife is observed, no vehicles or equipment would be moved until the animal has left voluntarily or is moved out of harm's way by an authorized biologist. Should a dead or injured special-status species be found in a trench or excavation or anywhere in the construction zone or along an access road, the authorized biologist shall contact BLM and/or USFS (for activities on land managed by the agencies) and the Wildlife Agencies within 48 hours of the finding. The authorized biologist shall record the species found, the location of the finding, and the cause of death (if known), and shall submit a photograph and any other pertinent information; this information shall be submitted to the appropriate wildlife agency.
BIO-6	*Implement a Worker Environmental Awareness Program.* An authorized biologist(s) shall conduct a detailed biological Worker Environmental Awareness Program (WEAP) for all Project personnel before any construction or activities within the Project footprint. The WEAP shall include discussions of Project permits and brief summaries of their conditions; discussions of agency involvement, their applicable sensitivity measures, and relevant environmental protection legislation (e.g., the Endangered Species Act, the Migratory Bird Treaty Act); descriptions of special-status species and other sensitive resources that could exist in the Project area, along with their locations, legal status and protections; and a review of all measures to be implemented for avoidance of these sensitive resources. The final list of wildlife species to be included in the WEAP may be reduced at the discretion of the biologist with concurrence from applicable agencies. **6a.** Training materials and briefings shall also include the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; sensitivities of working on NFS and BLM lands and identification of USFS and BLM

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	sensitive species; hazardous substance spill prevention and containment measures; a contact person in the event of the discovery of dead or injured wildlife; and review of mitigation requirements. Discussion of GPs and BMPs shall include topics such as appropriate work limits, avoiding the spread of non-native plant species, fire safety, wildlife avoidance, trash and debris collection, spill prevention and containment protocol, and appropriate protocol for passage and/or construction near riparian zones. Sightings of sensitive wildlife species or harmful encounters with any wildlife species shall be reported to the authorized biologist immediately for evaluation and, as necessary, reporting to agencies. **6b.** Training materials and a course outline shall be provided to the USFS/BLM for review and approval at least 30 days before the start of construction. Maps showing the location of special-status wildlife, fish, or populations of rare plants, exclusion areas, or other construction limitations (e.g., limited operating periods) will be provided to the environmental monitors and construction crews before ground disturbance. **6c.** The training shall be conducted for all crew members present for the start of construction. If new crew members are brought to the Project after this time, they shall take part in the WEAP before beginning construction work; if the authorized biologist is not available at this time, new crew members shall be given a summary handout of the WEAP until the full WEAP can be administered by the authorized biologist, to be conducted no more than one workweek following the crew members' assignment to the Project. All crew members who have completed the WEAP shall submit their names to a list to be updated continuously and furnished to agencies upon request. No construction worker may work in the field for more than five days without participating in the WEAP.
BIO-7	*Impacts to Raptors.* **7a.** If Project construction activities cannot occur completely outside the bird breeding season, then pre-construction surveys for active nests shall be conducted by a qualified biologist within 1,200 feet of the construction zone no more than seven days before the initiation of construction that would occur between February 1 and August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG, BLM, and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the BLM and USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a species-specific buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The buffer (660-foot eagle and one-mile helicopter) may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance, with the approval of the U.S. Fish and Wildlife Service (USFWS), CDFG, BLM or USFS, as appropriate (USFS 2005). On NFS lands, the USFS shall apply the USFS Land Management Plan Standard S18 (Part 3 of the Land Management Plan), which states, "Protect known active and inactive raptor nest areas. Extent of protection will be based on proposed management activities, human activities existing at the onset of nesting initiation, species, topography, vegetative cover, and other factors. When appropriate, a no-disturbance buffer around active nest sites will be required from nest-site selection to fledging." If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. On BLM lands, this will include coordination and written approval by the BLM. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent. **7b.** Before construction, LADWP shall identify all existing raptor nests that would be affected by Project construction. LADWP shall coordinate with the USFWS, CDFG, USFS and BLM for the proposed removal of nests that may present safety issues associated with the construction activities. All nest removals shall occur after the nest is demonstrated to be inactive by a qualified biologist and have been shown to not result in take as defined by the Migratory Bird Treaty Act (MBTA).

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BIO-8	*Avoid nesting season and limit disturbance of nesting birds.* LADWP shall conduct pre-construction surveys for nesting birds if construction and removal activities are scheduled to occur during the breeding season. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions (e.g., high altitude locations) with the approval of the CDFG and/or USFS. LADWP shall be responsible for designating qualified biologists who can conduct pre-construction surveys and monitoring for breeding birds. The résumé of the proposed biologists will be provided to the USFS for concurrence before ground disturbance. If breeding birds with active nests are found, a biological monitor shall establish a 300-foot buffer around the nest for ground-based construction activities and a one-mile buffer for helicopter use if helicopters are flying below 300 feet, and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails. If nesting bald or golden eagles are identified, a 660-foot no activity buffer will be implemented. The 300-foot (or 660-foot eagle and one-mile helicopter) buffer may be adjusted to reflect existing conditions, including ambient noise, topography, and disturbance with the approval of the USFWS, CDFG, or USFS, as appropriate and in coordination with LADWP. On NFS lands, the USFS shall have the authority to define/redefine such buffers. The biological monitors shall conduct regular monitoring of the nest to determine success/failure and to ensure that Project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. The biological monitors shall be responsible for documenting the results of the surveys and the ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies (e.g., on NFS lands documentation will be provided to the Forest Biologist). If for any reason a bird nest must be removed during the nesting season, LADWP shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. On NFS lands, this will include coordination and written approval from the USFS. LADWP shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.
BIO-9	*No mitigation measures required for Impact BIO-9.*
BIO-10	*No mitigation measures required for Impact BIO-10.*
BIO-11	*Reduce avian electrocutions/collisions on transmission lines.* Raptor safety protection will be required on tower/conductor (lines) in appropriate locations. The Project would have minimum clearance between phase conductors or between phase conductors and grounded hardware, as recommended by the Avian Power Line Interactive Committee (APLIC 2006), that are sufficient to protect even the largest birds, such as California condor, and therefore would present little to no risk of bird electrocution. New Project structures shall be designed to implement collision-reducing techniques as described in the latest version of the APLIC guidelines. Devices such as swan wrapping or other similar functioning devices may be required if areas are identified as being a hazard to birds. In addition, per General Practice (GP) 8, an Avian Protection Plan will be developed for this Project that will include avian collision protocols.
BIO-12	*No mitigation measures required for Impact BIO-12.*
BIO-13	*Protect special-status plant species and their habitat.* **13a.** Conduct preconstruction surveys for State and federal Threatened, Endangered, Proposed, Petitioned, Candidate, USFS Sensitive, USFS Watch, BLM Sensitive, and California Native Plant Society (CNPS) listed plants and avoid any occurrences of these plants. LADWP shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in a 250-foot radius around all areas subject to ground-disturbing activity, including, but not limited to, tower pad preparation and construction areas, tower removal sites, pulling and tensioning sites, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by an authorized plant ecologist/biologist according to protocols established by the USFWS, CDFG, USFS, BLM, and CNPS. The résumé of the proposed biologists will be provided to the

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	USFS and BLM for concurrence before ground disturbance. The completion of these surveys shall be coordinated with the federal land manager. All listed plant species found shall be marked and avoided. If a federally listed plant species cannot be avoided on private land, consultation with USFWS will occur. **13b.** Before site grading, any populations of listed plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance, including human trampling, erosion, and dust. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and include consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, edaphic physical and chemical characteristics) that are identified by a qualified plant ecologist and/or Forest botanist. At minimum, the buffer shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems of the plant. The buffer for herbaceous species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, USFS, and BLM and in coordination with LADWP. If impacts to listed plants are determined to be unavoidable, the USFWS shall be consulted for authorization, through the context of a Biological Opinion. Additional mitigation measures to protect or restore listed plant species or their habitat may be required by the USFWS before impacts are authorized, whichever is appropriate. **13c.** Impacts to non-listed plant species (i.e., USFS Sensitive, CNPS List 1,2 and 4 species) shall first be avoided where feasible, and, where not feasible, impacts shall be compensated through reseeding (with locally collected seed stock), or other USFS or BLM approved methods. For USFS lands, if the ANF determines Project activities will result in the loss of a significant portion of the known individuals of USFS Sensitive plant species, and reseeding/transplanting are not feasible options, LADWP shall preserve existing off-site occupied habitat that is not already part of the public lands in perpetuity at a 2:1 mitigation ratio (habitat preserved: habitat impacted).This ratio will apply only to specific acreage inhabited by special-status plant species that are removed during construction, and will supersede ratios listed in Table BIO-MM-1 regardless of habitat type. The determination of a significant rare plant population loss will be decided by the ANF botanist on a species and location basis, after available literature, research, and overall species distribution are reviewed. If avoidance, reseeding/transplanting, and, preservation of off-site habitat occupied by the impacted species are not found to be possible, the ANF will consider off-site restoration of degraded ANF lands and/or preservation of non-public lands with suitable habitat for the impacted species. The preserved habitat shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified plant ecologist. **13d.** All special-status plant species impacted by Project activities shall be documented in an annual report and submitted to the federal land manager (USFS and BLM) until the success criteria outlined in the Habitat Restoration Plan are met. Where reseeding has occurred, LADWP shall track the success of the plants during the course of the annual restoration monitoring. This information shall be submitted as part of the annual report to the federal land manager (USFS and BLM).
BIO-14	*Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat.* **14a** All Project activities taking place within suitable habitat for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo shall be conducted from November through early March, which is a period outside their breeding seasons (Sedgwick 2000, Sogge 2000, Brown 1993, Kus 2002, Hughes 1999). If these activities cannot be avoided during the breeding season, the following measures shall apply: **14b** If construction activities must occur during the breeding season in areas that have the potential to support listed riparian species, an authorized ornithologist shall conduct protocol surveys of the Project and adjacent areas within 500 feet to determine if this species is present within the area and to determine breeding status. USFWS protocol surveys will be conducted for southwestern willow flycatcher, least Bell's vireo, and western yellow-billed cuckoo (if no protocols exist, the appropriate land management agency will establish the protocols to be used). In known occupied habitat for listed riparian birds, LADWP shall only conduct focused surveys of the Project and adjacent areas within 500 feet. The surveys shall be of adequate duration to verify potential nest sites if work is scheduled to occur during the breeding season. If breeding is confirmed, the USFWS-recommended buffers will be applied and no activities will occur within

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	that buffer. **14c** Protocol or focused surveys, as appropriate, should be conducted within one year of start of construction. However, on NFS lands, annual surveys in suitable habitat may be required during construction. These surveys may be modified through the coordination with the USFWS, CDFG, USFS, LADWP and the BLM based on the condition of habitat, the observation of the species, or avoidance of riparian areas during the breeding season. **14d** If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. On NFS or BLM lands, these agencies would be notified immediately. In coordination with the USFWS, CDFG and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A) hourly Leq at the edge of the nest site as determined by an authorized biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the authorized biologist determines that the construction activities are disturbing nesting activities, the authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist and USFS, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No construction or vehicle traffic shall occur within this buffer during the breeding season for these species. **14e** The nest must be monitored by an authorized biologist during the construction activities. If the monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor shall notify the construction manager, and the construction manager, in consultation with the biological monitor, has the authority to implement measures to reduce the noise and/or disturbance in the vicinity. **14f** Because these species are State-listed as endangered by CESA, LADWP would apply for an ITP if take of any of these species is anticipated during Project construction.
BIO-15	*Protect coastal California gnatcatcher and its habitat.* **15a.** All Project activities taking place within suitable habitat for the coastal California gnatcatcher shall be conducted from September through February, which is a period outside their breeding season. If these activities cannot be avoided during the breeding season, the following measures shall apply: **15b.** LADWP shall conduct protocol surveys for coastal California gnatcatchers in areas supporting coastal sage scrub habitat that may be affected by the Project. In known occupied habitat for the California gnatcatcher, LADWP shall only conduct focused surveys for coastal California gnatcatchers. Survey areas shall include a 500-foot buffer around Project disturbance areas. **15c.** If a territory or nest is confirmed, the USFWS shall be notified immediately; on NFS or BLM lands, these agencies would also be notified immediately. In coordination with the USFWS and the appropriate land management agency, a 300-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. This buffer may be adjusted, provided noise levels do not exceed 60 dB(A)hourly Leq at the edge of the nest site as determined by an authorized qualified biologist in coordination with a qualified acoustician. If the noise meets or exceeds the 60 dB(A) Leq threshold, or if the authorized biologist determines that the construction activities are disturbing nesting activities, the authorized biologist shall notify the construction manager, and the construction manager, in consultation with the authorized biologist, has the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dB(A) Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. No Project activities may occur in these areas unless otherwise authorized by USFWS. LADWP shall obtain incidental take authorization from the USFWS before further activities. **15d.** Protocol or focused surveys, as appropriate, shall be conducted, at a minimum, within one year of start of

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	construction. These surveys may be modified through the coordination with the USFS, BLM, and CDFG based on the condition of habitat, the observation of the species, or avoidance of nesting areas during the breeding season. **15e.** Construction activities in occupied gnatcatcher habitat will be monitored by a full-time authorized biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area. At a minimum, one full-time monitor shall be present for every two miles of active construction within occupied habitat. The monitors shall notify the construction manager, and the construction manager. in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed.
BIO-16	*Protect burrowing owl.* The following measures are proposed to minimize the potential for take of burrowing owl nests during construction associated with the proposed Project. **16a** Preconstruction surveys will be conducted throughout the Project site and laydown areas for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash). **16b** Occupied burrows will not be disturbed during the breeding season (February 1 through August 31) unless an approved biologist verifies, through non-invasive methods, that both 1) the birds have not begun egg-laying and incubation, and 2) that juveniles from the occupied burrow are foraging independently and are capable of independent survival. **16c** Occupied burrows will be protected with a 600-foot buffer, if possible. **16d** When the destruction of an occupied burrow is unavoidable, the owl(s) will be passively relocated in accordance with the CDFG memo dated October 17, 1995. Relocation efforts will occur at least one week before ground disturbance of the area. A biologist will monitor the success of the relocation. A monitoring plan will be submitted to and approved by CDFG and BLM.
BIO-17	*Protect the bald eagle and golden eagle.* **17a** If construction occurs during bald eagle and golden eagle breeding season, preconstruction surveys shall be conducted, in accordance with USFWS protocol requirements, for the Project area in regions with suitable habitat. Any active nests shall have an appropriate exclusion buffer established. This buffer shall be established based on existing conditions in consultation with the LADWP, USFS, BLM, CDFG and/or USFWS. **17b** Whenever bald eagles and golden eagles are observed within 100 yards of the construction area, construction shall be halted and shall not resume until the eagles leave. **17c** If a helicopter will be used for construction or maintenance, the aircraft must be no closer than 1,000 feet vertical or horizontal distance from communal roost sites.
BIO-18	*Protect California condor.* **18a** For all Project activities taking place immediately adjacent to or within known condor-occupied areas, a qualified biologist will monitor all construction activities and assist LADWP in the implementation of the monitoring program. The résumé of the proposed biologist(s) will be provided to the BLM and USFS for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within known condor-occupied areas. The authorized biologist shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area. The authorized biologist will have radio contact with the Project foreman, who will be in radio contact with the helicopter pilot. The biologist will provide information to LADWP to avoid conflicts with condors. All condor sightings in the Project area will be reported to the USFWS and USFS (on NFS lands). LADWP will coordinate with USFWS on the construction schedule and helicopter work areas to determine if any condors have been tracked or observed in the vicinity of the Project area. If condors are observed in helicopter construction areas, LADWP shall avoid further helicopter use until the animals have left the area and the USFWS will be notified immediately. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the condors leave the area. Should condors be found nesting within 1.5 miles of the construction area, no

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	construction activity will occur until further authorization from the USFWS and USFS (on NFS lands). **18b** **Microtrash**. All trash is required to be disposed of as written in the Proper Disposal of Construction Waste Plan for the Project. Additional language has been added to this Plan to address the disposal of microtrash. Workers will be trained on the issue of microtrash – what it is, its potential effects to California condors, and how to avoid the deposition of microtrash. In addition, all workers will properly dispose of their trash throughout the day and daily sweeps of the work area will occur to collect and remove trash in locations with the potential for California condors to occur. **18c** **California Condor Worker Education Program**. LADWP will develop a flyer that will be distributed to all workers on the Project concerning information on the California condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California condor and how to distinguish condors from turkey vultures and golden eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the Project; and contact information for communicating condor sightings. **18d** **Reporting**. All California condor sightings in the Project area will be reported directly to the USFWS, USFS, and BLM (as appropriate). Before commencement of helicopter activity, LADWP will coordinate with a USFWS condor biologist to determine if any condors have been tracked or observed in the vicinity of the Project area.
BIO-19	*Protect California spotted owl.* Before construction activities within suitable habitat, LADWP shall have a qualified biologist conduct USFS protocol surveys for the California spotted owl to establish or confirm the location of nests within the Project. The résumés of the proposed biologists shall be provided to the USFS for concurrence. If nests or breeding pairs are found during the surveys, the limited operating period (LOP) will be applied according to the ANF Land Management Plan (Standard 20 – Part 3). Where a biological evaluation by a qualified ornithologist determines that a nest site would be shielded from planned activities by topographic or other features that would minimize disturbance, the buffer distance may be reduced upon approval of the USFS on NFS lands. In addition, no helicopter overflights shall be authorized without USFS approval. If approved, minimum altitudes will be 300 feet above a territory at an altitude designated by the USFS. This buffer may be adjusted through consultation with the USFS.
BIO-20	*Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox.* **20a.** In areas identified as suitable habitat during the 2008 surveys, preconstruction surveys will occur for badgers, ground squirrels, pocket mice, and kit foxes. If present and feasible, construction would be avoided in or adjacent to occupied habitat during breeding season. **20b.** LADWP will consult with CDFG to see if a 2081 Permit for incidental take of Mohave Ground Squirrel is required.
BIO-21	*Protect sensitive bat species.* **21a** **LADWP shall conduct a pre-construction survey** (e.g., vegetation removal, grading) for roosting bats within 200 feet of Project activities within 15 days before any grading of rocky outcrops or removal of trees (particularly trees 12 inches in diameter or greater than 4.5 feet above-grade with loose bark or other cavities). 1) LADWP shall also conduct surveys for roosting bats during the maternity season (March 1 to July 31) within 300 feet of Project activities. Trees, rocky outcrops, and mine features shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). Surveys duration shall be a minimum of one day and one evening. The résumé of the biologist shall be provided to the USFS and BLM (as appropriate) for concurrence before any Project activities. 2) If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist shall survey (through the use of radio telemetry or other CDFG/USFS/BLM approved methods) for nearby alternative maternity colony sites. If the bat biologist determines, in consultation with and with the approval of the CDFG, USFS, and BLM (as appropriate), that there are alternative roost sites used by the maternity colony and young are not present, no further action is required, and it will not be necessary to provide alternative roosting habitat (i.e., Mitigation Measure BIO-21b would not apply, although Mitigation Measure BIO-21c would still apply). However, if there

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	are no alternative roost sites used by the maternity colony, Mitigation Measure BIO-21b is required. If no active roosts are found, no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, Mitigation Measure BIO-21b is not necessary, but Mitigation Measure BIO-21c is required. **21b** **Provision of substitute roosting bat habitat.** If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or close to, the Project site no less than three months before the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats' requirements in coordination with CDFG and ANF. By making the roosting habitat available before eviction (Mitigation Measure BIO-21c), the colony will have a better chance of finding and using the roost. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The appropriate agencies shall also be notified of any hibernacula or active nurseries within the construction zone. Construction will not proceed in proximity of active hibernacula or nurseries until approved by appropriate agencies. Exclude bats before demolition of roosts. If non-breeding bat hibernacula are found in towers or trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted upon the approval of appropriate agencies and under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). The résumé of the bat biologist shall be provided to the CDFG, USFS, and BLM (as appropriate) for concurrence before any Project activities. In situations requiring one-way doors, a minimum of one week shall pass after doors are installed, and temperatures should be sufficiently warm for bats to exit the roost, because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal). 1) If an active maternity roost is in an area to be impacted by the Project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., before March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above. **21c** **Survey for bat nursery colonies.** A CDFG-approved biologist shall conduct a habitat assessment for bat nursery colonies before any construction activity. The approved biologist shall then conduct a survey for bat nursery colonies or signs of such colonies before construction. Direct impacts to a nursery colony site shall not be allowed, and approach of, or entrance to, an active nursery colony site shall be prohibited. Before any blasting or drilling in the vicinity of a nursery colony site, the CDFG-approved biologist shall work with the construction crew to devise and implement methods to minimize potential indirect impacts to the nursery colony site from falling rock or substantial vibration (while a nursery colony is active). The methods shall include an option to halt any construction activity that would cause falling rock, substantial vibration impacts, or any other construction-related impact to a nursery colony as determined by the approved biologist, until the colony is inactive. Should falling rock block the entrance to a nursery colony site, the contractor shall work with the approved biologist to reopen an entrance to the site. **21d** If habitat must be removed for construction to continue, a two-step removal process will be implemented. The two-step removal process will involve permitted biologists to alter the habitat outside of the season of use (i.e., outside of hibernating/maternity season) to make the habitat less suitable, and the following day the habitat will be removed under the supervision of the permitted biologist.
BIO-22	*Protect special-status herpetofauna.* An authorized biologist with demonstrated expertise with special-status herpetofauna shall monitor all construction activities and assist LADWP in the implementation of the monitoring efforts. The résumé of the proposed biologist will be provided to the USFS or BLM (as appropriate) for concurrence before the onset of ground-disturbing activities. The authorized biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of the special-status herpetofauna. Any special-status herpetofauna found

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	within a Project impact area shall be captured by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the authorized biologist will direct the installation of the fence. Exclusion fencing will only be used for special-status herpetofauna that are not protected by CESA, unless specifically authorized by an ITP, or are not considered Fully Protected Species under Fish and Game Code or Title 14 of the CCR. Clearance surveys for special-status herpetofauna shall be conducted by the authorized biologist before the initiation of construction each day. Authorized non-federal biologists will have the appropriate CDFG scientific collection permit.
BIO-23	*Protect desert tortoise and habitat loss.* **23a** In areas of suitable desert tortoise habitat, preconstruction clearance surveys according to USFWS protocol will be conducted by authorized biologists. Surveys will be conducted by an authorized biologist and will provide 100 percent coverage of all areas to be disturbed during construction. All desert tortoise burrows and burrows constructed by other species that might be used by desert tortoises will be examined to assess occupancy of each burrow by desert tortoises and processed in accordance with the current USFWS guidelines (USFWS 2009d). If tortoise is observed or sign is found, construction activities will be monitored by a biologist authorized by the USFWS. If no tortoise sign is found, monitoring by an authorized biologist would not be required. Should a tortoise wander into non-monitored construction sites, all ground-disturbing activities will stop and a biologist approved to handle desert tortoise will be called to the site to move the tortoise out of harm's way, and the remainder of construction in desert tortoise habitat shall be monitored by an authorized biologist. **23b** Vehicular traffic during construction in desert tortoise habitat will be confined to existing routes of travel to and from the Project site, and cross-country vehicle and equipment use outside designated work areas will be prohibited. Where new access is required outside of existing roads (e.g., new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction and desert tortoise clearance surveys will be conducted. During the desert tortoise active season (March to May and September to October), speed limits along Project roads shall be limited to 15 mph in desert tortoise habitat. **23c** Burrows within the construction zone or along access routes shall be flagged by the authorized biologist so that the qualified biologist would be able to more easily locate them during construction. The authorized biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to ensure that desert tortoise impacts are avoided during Project construction. All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist if they cannot be avoided by Project realignment. The construction area includes the expansion area of the Barren Ridge Switching Station (235 feet) and 500 feet total or 250 feet on either side of the new 230 kV transmission line. The 250 feet on either side of the transmission line account for the access roads, spur roads, tower assembly, and installation. The staging sites and concrete batch plants will not be placed within the desert tortoise habitat. **23d** Desert tortoises that are found above ground in active construction areas shall be placed out of harm's way in the shade of a shrub or other cover location by the USFWS and BLM-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least one week after placement in the new burrows to ensure their safety. If a tortoise is in a construction or maintenance area and is not moving of its own accord, activities would be halted until the authorized biologist is able to move it out of harm's way. **23e** Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If the tortoise does not move within 15 minutes, the authorized biologist shall relocate the tortoise out of harm's way, but no more than 1,000 feet from its original location. Moving desert tortoise from harm's way will only occur on the transmission line portions of the Project. A desert tortoise translocation plan may be needed if desert tortoises are found within the Barren Ridge Switching Station expansion site; the authorized biologist shall contact the USFWS for guidance on developing this plan. **23f** Within potential desert tortoise habitat areas, vehicles shall not exceed 20 miles per hour on access roads

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	during the period of highest desert tortoise activity (March 1 through October 31). **23g** Tower foundations or other excavations that pose a potential to entrap or injure desert tortoise shall be inspected three times daily until the foundation or other structure is in place and the excavation is filled in. Excavations also will include an escape ramp. **23h** The Project Worker Environmental Awareness Program (WEAP) will include information on desert tortoise. The program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise as it is relevant to the Proposed Action, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet and will become part of the environmental compliance permanent record. **23i** A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic desert tortoise predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill. **23j** LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS. In construction areas that are heavily used and in potentially occupied desert tortoise habitat, work and staging areas, including the locations of the transmission line under construction, may be fenced with approved temporary desert tortoise exclusion fencing in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. An authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the USFWS, CDFG, and with the BLM when construction areas are within lands administered by the BLM. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed or conducted by an authorized biologist. The fencing will remain in place for the duration of construction activities at a particular location and will be removed when construction activities are complete. **1)** Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist. A desert tortoise authorized biologist will inspect the fencing on a biweekly basis to ensure that no holes develop that could allow desert tortoises to enter the work areas. If holes are found, they will be repaired immediately. **2)** If a desert tortoise is found within an area that has been fenced to exclude them, activities will cease until an authorized biologist moves it out of harm's way outside of the fence, no greater than 500 meters away from its original location. At this time, the fencing will be inspected for holes, and any breaches in the fence will be immediately repaired. **23k** No pets or firearms will be permitted in the work area.
BIO-24	*Protect arroyo toad and California red-legged frog.* **24a** **LADWP shall conduct USFWS-approved protocol surveys for arroyo toads and California red-legged frogs at all locations containing suitable habitat near the proposed construction sites** within two years before the start of construction. **24b** If arroyo toads are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no arroyo toads are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS.

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	1) LADWP shall retain an authorized biologist with demonstrated expertise with arroyo toads to monitor all construction activities in occupied arroyo toad habitat and assist LADWP in the implementation of the monitoring program. The résumés of the proposed biologists will be provided to the USFS for concurrence. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of arroyo toad. 2) All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day. Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFS and the authorized biologist. LADWP shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, LADWP, USFS, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads. 3) Any arroyo toads found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in areas that contain suitable habitat. 4) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 5) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 6) LADWP will avoid ground disturbing activities (e.g., grading, stream crossing upgrades, parking) along access roads within a 1.0 mi (1.6 km) buffer of occupied stream habitat for arroyo toads during the activity period for arroyo toads (March through November). This date and buffer may be modified based on the existing temperature regime and habitat conditions, with Angeles National Forest approval. 7) LADWP will limit use of the access roads in areas known to support arroyo toad within a 1.0-mile (1.6 km) buffer to daylight hours only during the activity period for arroyo toads (generally March through November). Use of these roadways during rain events will not occur during the activity period for arroyo toads. Vehicle speeds will be limited to 15 mph (24 kph), and no parking or loitering will occur along the access roads. An authorized biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible and ensure that activities are in compliance with the California Fish and Game Code. 8) No stockpiles of materials will occur in areas occupied by arroyo toads. 9) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain arroyo toads will be reported to the USFS and USFWS within one hour. 10) For each ac/ha of arroyo toad occupied habitat that is permanently impacted on the Angeles National Forest, five ac/ha of arroyo toad occupied habitat will be conserved in the vicinity of the impacted habitat (i.e., impacts will be offset at a habitat ratio as required by the final Biological Opinion).
24c	If California red-legged frogs are detected, further surveys within the area will not be required and the avoidance measures detailed below will be followed. If no California red-legged frogs are detected, habitat assessments will be performed on a yearly basis to determine if the area continues to provide suitable habitat; if an area continues to provide suitable habitat, surveys will be repeated every two years until construction is completed. For all areas in which this species has been documented, LADWP shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and USFS. 1) All trash that may attract predators of red-legged frogs will be removed from work sites or completely secured at the end of each work day. 2) Between November 1 and March 31, no work will be authorized within one mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. The one-mile buffer distance may be reduced based on the topography of the site, with the approval of the USFWS and the USFS.

Mitigation Measure	Description
	3) If and as required by USFWS, between April 1 and October 31, no work will be authorized within 0.5 mile of occupied habitat, and no vehicular crossings at wet fords of those channels will be authorized. 4) If and as required by USFWS, from November 1 thru March 31, overflights will be restricted to a minimum altitude of 1,000 feet (305 m) from the stream bottom within 1.0 mile (1.6 km) of a California red-legged frog occupied stream. 5) Before the onset of any construction activities, LADWP shall meet on-site with staff from the USFWS and the USFS-approved biologist (authorized biologist). The authorized biologist shall hold a current red-legged frog permit from USFWS. LADWP shall provide information on the general location of construction activities within habitat of the red-legged frog and the actions taken to reduce impacts to this species. Because red-legged frogs may occur in various locations during different seasons of the year, LADWP, USFWS, USFS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on red-legged frogs. 6) Where construction would occur in habitat where red-legged frogs are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the LADWP and the responsible agency(s). All workers will be advised that equipment and vehicles must remain within the fenced work areas. 7) The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys. If red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist shall halt construction and report to the USFWS and the USFS immediately. 8) Fencing to exclude red-legged frogs will be at least 24 inches in height. 9) Construction activities that may occur near breeding pools or other areas where large numbers of red-legged frogs may congregate will be conducted during times of the year when individuals have dispersed from these areas (i.e., winter) or the species is dormant, unless otherwise authorized by the USFS and USFWS. The authorized biologist will assist LADWP in scheduling its work activities accordingly. 10) Any red-legged frogs found during clearance surveys shall be reported to the USFWS and the USFS immediately. Clearance surveys shall occur on a daily basis in the work area. 11) If the authorized biologist determines that Project activities are disturbing the species, they shall notify the construction manager, and the construction manager, in consultation with the biologist, will have the authority to halt all activities until appropriate corrective measures have been completed. 12) LADWP shall avoid nighttime activities when red-legged frogs may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area. 13) An authorized biologist must permanently remove from within the Project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible, and ensure that activities are in compliance with the California Fish and Game Code. 14) No stockpiles of materials will occur in areas occupied by California red-legged frogs. 15) To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times. 16) Any spills of fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California red-legged frogs will be reported to the USFS and the USFWS within one hour.

Summary of Impact Analysis Results

Helicopter Mitigation Impact Assessment

Helicopter Mitigation shall be implemented, as described in Chapter 2, Section 2.2.3, in steep areas of the ANF where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 2-22, Identified Helicopter Mitigation Map. During final design of the Project, areas other than those shown on Figure 2-22, including those on

Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM, and LADWP.

Noise, rotor wash, and activity associated with helicopter construction may disturb wildlife in the Project area and cause changes in wildlife occurrences and distribution. Noise disturbances include helicopter use, hauling, and other activity associated with helicopter construction. While helicopter effects on wildlife have not been extensively studied, some research has found that noise from aircraft, including helicopters, can be very stressful on wildlife. Helicopter noise can cause panic reactions in animals, leading to increased potential for injury due to collisions or stumbling as opposed to regular escape responses, which are generally more controlled (Radle 2007). A USFWS survey of biologists, refuges, hatcheries, and research centers found that waterfowl are most frequently disturbed by noise from aircraft and that wildlife reactions can range from minor responses in animal behavior to possible abandonment of an area (Radle 2007). Animals that disperse from an area due to helicopter construction may also be subject to a greater risk of mortality depending on their familiarity with the new area and the presence of predators. Dispersal- or noise-induced stress may lower animals' fitness and temporarily reduce their abilities to mate and raise young or efficiently forage.

Rotor wash is air driven downwards by the main rotor of the helicopter as it turns (the equivalent for fixed-wing aircraft is downwash). The blades of the rotor twist air downward as they pass and force it down. The air resists this and forces the rotor up, and this action supports the helicopter in the air. Rotor wash can induce physiological responses in animals, such as increased heart rates, but whether or not such responses cause harm is unknown (National Park Service 1994). Stress responses, such as increased heart rates, by themselves are an adaptation for encounters with predators and other environmental threats, which presumably must be faced daily. It is not known, therefore, if the addition of stressful events such as rotor wash actually harm animals (National Park Service 1994). Rotor wash may cause the spread of noxious weeds. However, BIO-2 (Prevent the spread of invasive weeds) requires LADWP to implement a weed control plan (Table 4.3.1-1).

Several other effects are possible as a result of helicopter construction. Helicopter construction would require the selection and use of helicopter staging areas, for which existing vegetation would need to be cleared before helicopter actions. These sites may also require grading and/or cut and fill activities. The disturbance caused at these sites—such as removal of the native seed bank or compaction of the soil within the sites—may result in more favorable conditions for the spread of noxious weed species. Use of helicopters both at the staging areas and at construction areas would raise fugitive dust from the ground without utilization of proper dust control methods such as those suggested in Mitigation Measure AIR-2a. Dust that settles onto vegetation may reduce plants' photosynthetic capabilities, causing a reduction in vigor and an increase in susceptibility to disease. Excessive declines in the health of plants can affect the health of the ecosystem, having wide-ranging effects that may affect wildlife that utilize the area and rely on the vegetation for food or cover.

Helicopter construction would also have some beneficial effects, however. It would reduce the amount of road access required by the Project, possibly decreasing the amount of road widening and subsequent disturbance to surrounding vegetation and riparian conservation areas. The average maximum permanent disturbance acreages per mile with conventional construction would be 2.4 acres for existing roads to be widened, 4.8 acres for new flat roads, 7.7 acres for new sloping roads, 11.6 acres for new steep roads, and 15.5 acres for new very steep roads. In contrast, the average maximum permanent disturbance per mile for helicopter construction would be 0.9 to 1.5 acres. This disturbance acreage for helicopter construction includes helicopter landing pads, tower sites and access roads. Based on existing road widths and widths required for conventional vehicle-based construction, 185 RCAs within the USFS portion of the Project were determined to be likely to be affected by Project implementation (Appendix N of the Biological Resources Technical Report). The use of helicopter construction would likely reduce this number depending on the location of towers to be constructed by helicopter.

Conductor Installation and Aerial Marker Spheres

FAA requirements may necessitate the installation of spherical marker balls on some conductor spans, although the marker balls will be placed on the ground wires and not on the actual wires or conductor that transmit the electricity. These are typically used to warn aircraft of power line locations but have also been used in some locations as warning systems for birds. Studies conducted on the effectiveness of marker balls have shown that reduction in bird collisions are possible; in one study, 50-centimeter marker balls spaced approximately 50 to 70 meters apart showed a 40% reduction in avian collisions (APLIC 1994). In another study in Nebraska, it was found that lesser sandhill crane (*Grus canadensis canadensis*) collisions were reduced up to 54% with one to five marker balls on each conductor span. Use of marker balls on a South Carolina transmission line suggested a 53% reduction in bird strikes (Manville II 2005). If used on the BRRTP, marker balls would be placed in areas where conductors are located over 200 feet above the ground, which is most likely to be in areas of major drainages or canyons. Implementation of marker balls in canyons would be most likely to reduce collision risk of high-flying or soaring birds, such as raptors. Within the Project area, these are most likely to be common species such as the red-tailed hawk (*Buteo jamaicensis*) or American kestrel (*Falco sparverius*), but may also be less common or protected species like Swainson's hawk (*Buteo swainsoni*), which is documented within the Project area on Alternative 2.

Management Indicator Species Impact Analysis Results

Management Indicator Species (MIS) that occur in the Project area include mule deer, mountain lion, arroyo toad, song sparrow, and California spotted owl. A review was conducted to determine whether the Project area was within known or potential habitat for each MIS. The mule deer is an indicator of management of healthy diverse habitats, the mountain lion of habitat fragmentation, the arroyo toad of aquatic habitat, the song sparrow of riparian habitat, and the California spotted owl of montane conifer forest. Each of these species and/or its habitat may be affected by Project implementation. For a more detailed analysis of Project effects on these species, refer to the *Management Indicator Species Analysis for the Barren Ridge Renewable Transmission Project* issued with the Biological Evaluation for the Project and included in Appendix I of this Final EIS/EIR.

No Action Alternative

No surface disturbance would occur since the Project would not be constructed; therefore, no biological resource impacts would occur as a result of the Project. As such, none of the associated Project activities would occur and the environmental impacts associated specifically with the Project would not occur. No cumulative impacts were identified under No Action.

However, throughout the entire Project area, ongoing maintenance of the existing transmission lines would continue to occur. This includes complying with regulations governing operation of transmission lines, such as maintaining access and spur roads, and trimming vegetation to maintain minimum clearance distances to the conductors and around towers. In the absence of the Proposed Action or Alternatives, biological resources would likely be impacted by continued maintenance and operation of the existing transmission lines within the Project area. Biological resources impacts can also occur during emergency work required by LADWP Water and Power System facilities and access roads. Emergencies consist of events that pose imminent threats to the mission of LADWP and to the safety of people, the environment, or property. The mission of LADWP is to provide dependable supplies of safe, quality water and power to its customers. Hence, emergencies could comprise such activities as: restoring water or power supply to the City of Los Angeles following earthquake or landslide; containment of water contaminated by natural or deliberate means; damage to transmission lines due to fire, flood or other natural disaster; repair of pipe fractures or tunnel failures; and release of water in remote areas to mitigate flooding in populated areas. Emergency repairs to Power System facilities may include, but not be limited to, slope repairs, erosion repairs, replacement of downed poles and transmission towers, reconductoring segments of existing lines, and pulling new line. Emergency activities cannot be delayed to enable careful planning to protect the public's biological resources; however, emergency planning can incorporate efforts to protect biological resources into programmed emergency responses. Therefore, LADWP includes any measures that can prevent damage to biological resources during emergency responses into the Emergency Response Plans.

Additional biological impacts can occur from the continued use of several OHV and power line access roads and hiking trails throughout the Project area. Disturbances associated with these activities include increased noise, crushing, trash debris, and increased human presence. In addition, the northern section of the Project area has seen an increase in urban development that would continue to impact biological resources and reduce habitat.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

Between the proposed Haskell Canyon Switching Station and the existing Castaic Power Plant, LADWP proposes the addition of 12 miles of a new 230 kV transmission circuit onto existing Castaic – Olive 230 kV transmission line structures (towers 1-1 through 12-1). The 12-mile alignment would run from the proposed Haskell Canyon Switching Station to the Castaic Power Plant.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.1-2). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impact to the ROW within any locations that these resources are known to occur. Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect impacts or direct impacts that may occur from construction vehicles or equipment accessing the Project site. Species that were reviewed and considered to be absent or unlikely to occur are not analyzed below. However, these species are analyzed in detail in the Biological Technical Report.

TABLE 4.3.1-2. POTENTIAL IMPACTS FROM THE 230 KV CIRCUIT 500-FOOT IMPACT CORRIDOR

New 230 kV Circuit	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present within 500-foot impact corridor				
California condor	0.7	0.7	0.1	0.1
USFS GIS Modeled Wildlife Habitat				
Arroyo toad	3.9	3.9	0.8	1.4
California red-legged frog	3.3	3.3	0.7	1.1
Least Bell's vireo	5.2	5.2	1.2	2.1
Southwest willow flycatcher	9.1	9.1	2.1	3.8
Non-modeled Wildlife Habitat				
California gnatcatcher	5.2	5.2	1.4	2.6
Riparian Conservation Area				
Yes	12.4	12.4	2.8	4.9
Wildlife Corridor				
Yes	29.5	32.2	6.3	10.2
Known Special-Status Plant Species on ANF lands				
Short-joint beavertail	13.6	16.0	2.5	3.4
Slender mariposa lily	0.7	0.7	0.1	0.1
Vegetation				
Chamise chaparral	51.8	56.9	11.1	17.9
Barren/developed	1.2	1.2	0.3	0.6
Riversidian sage scrub	39.3	39.7	7.3	10.9
Mapped Weed Species on ANF lands				
Indian hedgemustard	0.7	0.7	0.2	0.3
Horehound	0.7	0.7	0.2	0.3
Tocalote	5.9	5.9	1.4	2.6
Tree tobacco	0.7	0.7	0.2	0.3
Yellow sweet clover	2.0	2.0	0.5	1.0
Riparian Communities				
Southern coast live oak riparian forest	0.7	0.7	0.1	0.1
Southern cottonwood willow riparian forest	0.8	0.8	0.2	0.4

New 230 kV Circuit	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Southern sycamore alder riparian woodland	0.4	0.4	0.1	0.2
Biological Protected Area				
Castaic Lake SRA	21.0	21.5	3.5	4.7
San Francisquito Canyon	1.3	1.3	0.2	0.2
Santa Clara River SEA	2.0	2.0	0.2	0.2

Impacts to Native Vegetation

The new 230 kV transmission circuit route contains the following community types: Riversidian sage scrub (the type that occurs along the coastal base of the Transverse and Peninsular Ranges from Los Angeles County to Mexico, as defined by Holland 1986), chamise chaparral, southern coast live oak riparian, southern sycamore alder riparian, southern mixed chaparral, and ruderal vegetation. While LADWP intends to avoid native plant communities to the maximum extent possible and would flag resources for avoidance, construction of the new 230 kV circuit would still result in disturbance to a variety of native plant communities. Project impacts are considered permanent if they involve the conversion of land to a new use, such as with the construction of new roads or the footings of towers or new permanent helicopter landing areas, although, in some instances, helicopter landing sites may be subject to reseeding or restoration. Temporary project impacts are those effects that do not result in a permanent land use conversion. Temporary effects to vegetation communities or other ground disturbance activities restricted solely to the construction phase, such as grading roads and clearing vegetation within staging and pulling areas, are considered temporary provided that native vegetation is not replaced with infrastructure or the area is not maintained free of vegetation, and that restoration is deemed feasible prior to project implementation.

Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities. These ground-disturbing construction activities would include clearing and grading for tower pad preparation, tower removal sites, pulling and tensioning sites, helicopter staging areas, and construction, grading, and widening of new spur roads and existing access roads.

In total, the new circuit would permanently disturb a maximum of 0.7 acre of vegetation identified as rare and worthy of consideration by the CDFG, BLM and USFS (29.4 acres of non-rare vegetation), and would temporarily impact a maximum of 1.9 acres of rare vegetation (97.8 acres of non-rare vegetation). Types of California vegetation that are considered to be rare and worthy of consideration can be found in CDFG's "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Additional acreages of land disturbance may occur, but the vegetation communities impacted are unknown at this time, as final engineering has not been conducted. Table 4.3.1-3 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of the new circuit within all jurisdictions that occur in the corridor (250 feet on either side of the centerline). The disturbance estimates for the new 230 kV circuit are likely to be overestimates, as they are based on the disturbance impact model used for the new transmission line. The acreage of disturbance would change once pre-construction surveys are conducted.

TABLE 4.3.1-3. TEMPORARY AND PERMANENT IMPACTS TO VEGETATION COMMUNITIES ON THE NEW 230 KV CIRCUIT

Vegetation	Jurisdiction	Total Acreage of Vegetation Type in Jurisdiction	Minimum Temporary Disturbance (Ac.)	Maximum Temporary Disturbance (Ac.)	Minimum Permanent Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)
Chamise chaparral	State of California	134.42	21.50	23.83	4.61	7.60
Chamise chaparral	Private	68.63	9.28	10.05	1.73	2.27
Chamise chaparral	USFS	139.37	21.06	23.05	4.73	8.03
Barren/developed	State of California	11.04	1.18	1.18	0.31	0.58
Riversidian sage scrub	BLM	3.15	0.34	0.34	0.04	0.04
Riversidian sage scrub	State of California	137.89	15.12	15.28	2.82	4.26
Riversidian sage scrub	Private	161.52	17.88	18.15	3.19	4.59
Riversidian sage scrub	USFS	55.49	5.96	5.96	1.20	1.98
Southern coast live oak riparian forest	Private	0.68	0.07	0.07	0.01	0.01
Southern coast live oak riparian forest	USFS	6.11	0.66	0.66	0.08	0.08
Southern cottonwood willow riparian forest	State of California	0.30	0.03	0.03	0.01	0.01
Southern cottonwood willow riparian forest	USFS	7.49	0.80	0.80	0.21	0.40
Southern sycamore alder riparian woodland	Private	1.81	0.19	0.19	0.05	0.10
Southern sycamore alder riparian woodland	USFS	1.78	0.19	0.19	0.05	0.09

Indirect impacts to native vegetation communities could include alterations in existing topography and hydrology regimes, the accumulation of fugitive dust, disruptions to native seed banks from ground disturbance, and the colonization of non-native, invasive plant species.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion GPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on vegetation communities: Mitigation

Measures AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Special-Status Plant Impacts

Thirteen individuals of slender mariposa lily (*Calochortus clavatus* var. *gracilis*) and nine short joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*) were located along the proposed 230 kV circuit corridor. There is also a high potential for 13 other special-status plant species to occur along this route:

- Chaparral ragwort (*Senecio aphanactis*)
- Greata's aster (*Symphyotrichum greatae*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Nevin's barberry (*Berberis nevinii*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Ross's pitcher sage (*Lepechinia rossii*)
- San Gabriel bedstraw (*Galium grande*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with construction on towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

Under mitigation measure BIO-13 (Protect special-status plant species and their habitat), special-status plant species in the Project area that cannot be avoided by construction may be transplanted. Transplantation may carry its own negative impacts to both moved and resident plants. The plants that are moved may have difficulty establishing if there is already competition for resources (e.g., water or sunlight in areas of dense vegetation), and may undergo a period of stress until their roots can re-establish into the soil. If a large number of plants are being transplanted to one area, the resident plants may also experience reduced resource availability, especially if they are already under stress from any non-native vegetation. The local system itself may be overwhelmed if there are too many new individuals and may exceed its carrying capacity and its ability to support all the plants, both the residents and those that were moved. This may result in poor health for the plants and could result in unexpected plant mortalities. To help avoid this to the extent possible, these plants would only be removed and transplanted with concurrence and guidance from USFWS, USFS, and/or BLM, as applicable. It is expected that any transplanted plants would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone. Alternatively, they may be transferred to the appropriate regulatory agency for handling or transplanted to a location specifically designated by the appropriate agency.

Although rare plants were only detected in a few areas of the new 230 kV circuit corridor, there is a potential for some species to occur in areas that have not been subject to intense focused surveys or may have failed to germinate even though the rain year was considered adequate to detect annual plants. If any of these species are encountered during pre-construction focused surveys, all individuals or populations within Project disturbance areas would be marked and avoided to the maximum extent possible. However, it is possible that some USFS Sensitive plants would be subject to Project disturbance.

Restoration activities may inadvertently lead to negative effects on special-status plant species. For instance, seed collection from common native plants may result in the unintentional trampling of special-status species, should they be present in the area, or in the inadvertent removal or destruction of their seeds. Weed removal activities may lead to species being treated or removed that are not non-native. However, it is unlikely that special-status species would be present in areas of heavy non-native plant cover and may instead be present in areas of predominantly native or mixed native/non-native plant composition. In addition, weeding and seed collection efforts may lead to the unintentional transportation of non-native seed on clothing or weeding materials to areas occupied by special-status plants, potentially creating a new weed infestation. In order to minimize the negative impacts of these restoration activities mitigation measures such as effective preconstruction flagging of sensitive species, required training for field personnel to be familiar with identifying non-native species and/or species that are to be avoided, and washing seeds off of all equipment prior to entering new areas would assist in reducing the likelihood of incidental effects during seed collection or weed removal. While not all the rare plants identified in the Project area would be subject to construction-related disturbance, it is likely that there would be a loss or mortality of some rare plants. Some of these species are more common in the region and include California black walnut, Plummer's mariposa lily, and short joint beaver tail cactus. These species are considered to be more common in the ANF and are therefore less susceptible to loss on a forest-wide level. Other species, including Ross's pitcher sage, San Fernando Valley spineflower, and San Gabriel bedstraw, are of a more limited distribution and may be more susceptible to regional loss. However, as described above, impacts to many of the plant species identified in the Project area could be avoided or reduced if mitigation measures are implemented.

The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion control measures, monitoring construction, flagging vegetation for avoidance, and revegetating with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: Mitigation Measures AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6, (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). However, the addition of the new circuit onto existing towers is not expected to have the same probability of impact on special-status plants as the proposed new transmission line construction. This is because new access roads and tower sites should not be necessary.

Invasive Plant and Herbicide Use Impacts

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds.

For the purpose of this discussion, Project-related disturbance or impacts to all habitats, even disturbances such as grading for temporary road construction, were treated as permanent in large part due to the foreseeable establishment and spread of noxious weeds and the conversion of native habitats to ruderal habitats (or expansion of existing ruderal habitats) following disturbance. Noxious weeds often become established following disturbance. For example, in arid sites or in sites with poor nutrient availability, noxious weeds may become established following water and/or nutrient addition such as may occur along roadways as a result of increased runoff or nitrogen deposition.

Typically, in areas where few exotic species occur, the characteristics of the existing topsoil structure, cryptogamic crusts, or the existing native vegetation prevent weed seeds from germinating. Once soil disturbance has occurred, the soil structure or native biotic components are affected such that these factors no longer preclude the establishment of noxious or invasive weeds. Following establishment, new populations of weeds are often extremely difficult to eradicate. It may take several years or decades to re-establish the native soil structure and biota. As many noxious weeds occurring in Southern California are fast-growing plants adapted to high light conditions, removal of canopy vegetation, either in woodlands or in chaparral and scrub habitats, may release weed seeds present in the seed bank from dormancy and allow them to germinate and establish. The spread of invasive plant species could also increase from unauthorized vehicle use. In addition, some roads and potentially drivable terrain that were previously obstructed by vegetation may now be more visible, making them subject to unauthorized off-road vehicle use. Access to these areas threatens the recruitment of native vegetation and promotes the spread of non-native and invasive species. In some cases, the loss of native plant communities could be permanent. This is especially true of climax plant communities that take decades or more to develop, such as pinyon-juniper woodland and Mojave scrub. These areas are at risk of type conversion, especially if non-native and invasive weeds become established.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, and altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area.

Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations. The lingering effects of herbicide use to remedy noxious weed infestations could adversely impact native plants and wildlife and are discussed in further detail below. Ongoing operational and maintenance impacts could include the facilitation of noxious weed establishment and spread as a result of increased vehicular and human traffic.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

As part of a comprehensive Weed Control Program (BIO-2 [prevent the spread of invasive weeds]), several options may be utilized to limit or reduce impacts from invasive plants. To date, several methods exist and are regularly prescribed for the eradication of existing weed populations depending on their location and the habitat type they infest. Some of these include herbicide application, mechanical removal, biocontrol methods, prescribed burns or floods, and shading. The removal of established noxious weed populations is best accomplished by species-specific methodologies, which may include a combination of the above removal procedures or precise timing of specific actions. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a differing follow-up treatment method after the initial removal occurs.

Noxious weed control measures prescribed as mitigation for Project impacts should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. While the overall benefits of herbicide use are generally straightforward, herbicide use may have detrimental effects on ecosystem values and functions. There are several exposure scenarios possible for herbicides and wildlife. These include direct spray; indirect contact through grooming or contact with affected vegetation; and ingestion of contaminated media, including vegetation, prey species, and water. However, with the measures prescribed as mitigation, the potential for impacts to aquatic fauna would be minimized. For non-target terrestrial plants, the primary hazard is unintended direct spray or spray drift. Off-site drift typically depends on the droplet size and meteorological conditions. Other off-site exposure scenarios for vegetation include percolation, runoff, sediment transport, and wind erosion.

Table 4.3.1-4 contains a list of herbicides, including their potential risks to native vegetation and wildlife, which are proposed for use within the Project area. It is important to note that there is an extensive variability related to different types of exposure scenarios and dosages for each herbicide. Furthermore, the effects of certain herbicides can vary exclusively at the species level. Therefore, the information presented in Table 4.3.1-4 is intended as a general overview of the possible effects of herbicide use. Full analyses on the effects of these eight listed herbicides on human and ecological health can be found in the Forest Service Risk Assessment Final Reports (USFS n.d.), which are incorporated here by reference.

TABLE 4.3.1-4. GENERAL EFFECTS OF HERBICIDES ON PLANT AND WILDLIFE SPECIES

HERBICIDE	EFFECTS ON VEGETATION	EFFECTS ON WILDLIFE
Chlorsulfuron	• Rate and extent of uptake following foliar application varies by species • Inhibits an enzyme that is essential for plant growth	• Causes weight loss and decreased body weight gain in experimental mammals • Appears to have low toxicity in mammals, birds, fish, and invertebrates
Clopyralid	• Highly selective toxicity to terrestrial plants (primarily broadleaf species) • Relatively non-toxic to aquatic plants and grasses • Regulates plant growth by acting as a synthetic auxin, thus altering plant's metabolism and growth characteristics	• Appears to be relatively non-toxic to terrestrial or aquatic wildlife • May adversely affect liver and kidney weights and gastric epithelial tissue • Appears to show no effect on viability of bird eggs and chick immune systems
Dicamba	• Mimics plant hormone indole-3 acetic acid • Mechanism appears to involve a stimulation of ethylene production leading to accumulation of abscisic acid and/or cyanide resulting in abnormal growth	• Displays an apparent pattern of interspecies scaling, with smaller animals being less sensitive than larger animals • Relatively non-toxic to mammals, fish, and amphibians • Acute toxicity to birds appears to be generally low • May reduce growth and stunt eye development in pre- and post-hatch birds
Glyphosate	• Inhibits shikimic acid pathway, effectively blocking synthesis of certain phenolic compounds and aromatic amino acids • Inhibits photosynthesis, respiration, and nucleic acid synthesis	• May reduce food conversion efficiency leading to loss of body weight in mammals and birds • Certain surfactants used with glyphosate are much more toxic to fish that others • May cause histological changes in gills, kidneys, and liver of some fish

HERBICIDE	EFFECTS ON VEGETATION	EFFECTS ON WILDLIFE
Hexazinone	• Inhibits photosynthesis by diverting highly reactive molecules into a chain reaction that destroys chloroplast, cell membranes, and other vital compounds that eventually leads to cell death and ultimately plant destruction • Can be used as a pre or post emergent herbicide	• Relatively low toxicity to birds and mammals. • Slightly toxic to most aquatic animals, including fish, but can be highly toxic to algae and aquatic macrophytes • Potential to build up in soil and plant matter and move through food chain if used at very high rates
Imazapyr	• Inhibits an enzyme that is essential for plant growth • Practically non-toxic to conifers	• Appears to be relatively non-toxic to terrestrial and aquatic animals
Sulfometuron methyl	• Blocks cell division in the active growing region of the stem and root tips • Can be used as a pre or post emergent	• Practically non-toxic to birds • Slightly toxic to fish, mostly in the hatch stage • Slightly toxic to mammals, but no birth defects or cancer
Triclopyr	• Mimics indole auxin plant growth hormones causing uncontrollable growth • At sufficiently high levels of exposure, abnormal growth is so severe that vital functions cannot be maintained and plants die	• May cause developmental effects at levels that cause maternal toxicity in mammals • May have adverse affect on mammalian kidney functions • Higher concentrations may cause mortality or immobility in frog tadpoles • Larger doses may cause a decrease in body length and smaller doses may lead to lethargic behavior in some fish • Relatively non-toxic to birds

Source: http://www.fs.fed.us/foresthealth/pesticide/risk.shtml

The use of herbicides in the Project area would comply with regulations set forth by the EPA and the California Department of Pesticide Regulation (CDPR). Additionally, any herbicide use on NFS lands would be subjected to the review and approval of the appropriate USFS personnel. Although overspray may adversely affect some non-target species, the removal of noxious or invasive weeds and the control of existing populations would be considered a beneficial effect.

The following measures would be followed in order to minimize the detrimental effects of herbicides to native and special-status vegetation and wildlife:

- The most effective herbicides with the least toxic surfactant available shall be used.
- Herbicides shall not be applied during or within 24 hours of a 70% chance of occurring rain event.
- Herbicides shall not be used within Riparian Conservation Areas (RCAs) on the ANF without approval of the USFS. In riparian areas, only water-safe herbicides, surfactants and adjuvants shall be used.
- Herbicides shall not be applied by spray equipment when wind velocities exceed 10 mph. Herbicides applied by sponge or paintbrush to cut stumps shall not be applied at over 15 mph.
- In areas containing special-status plants or animals, there would be a 5- to70-foot buffer where herbicides are not used. The size of the buffer would be determined and flagged for avoidance by an approved botanist/biologist, based on phenology or life cycle at time of treatment, rareness and imperilment of species, vulnerability of herbicide being used, concentration of herbicide used based on no observed effect concentrations and/or environmental conditions and terrain.
- Where herbicide control methods are used, disposal of the plant debris would follow the regulations set by the USFS/BLM. The timing of the weed control treatment shall be

determined for each plant species in consultation with the USFS/BLM (on NFS/BLM lands) with the goal of controlling populations before they start producing seeds.

- Pre-emergent herbicides would only be used in areas that have a very low potential for supporting native plant species after disturbance, as determined by an agency botanist.

Wildlife Impacts

One special-status wildlife species is known to occur within the new 230 kV circuit impact corridor (Table 4.3.1-2):

- California condor (*Gymnogyps californianus*)

California Condor

GPS data provided by USFWS has placed California condors within the 230 kV circuit impact corridor (250 feet on either side of the centerline), including in various spots along the corridor's length, over Castaic Lake, and particularly to the west around Lake Piru. There would be direct or indirect impacts to California condor associated with implementation of the new 230 kV circuit. This species is expected to be present within the 230 kV impact corridor based on GIS data supplied by USFWS (USFWS 2008, USFWS 2009). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that would occur on this alignment would have a substantial effect on this species, as juveniles have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996), and could likely adapt to the relatively minor change. Construction for the Project could cause short-term temporary behavioral avoidance of the area due to increased activity or noise. Condors are known to become alarmed by loud noises from distances of over one mile, and may avoid coming close to or nesting near these areas or may alter their behavior to avoid the activity (USFWS 1996). However, Project construction should not involve overly excessive noises such as blasting, and LADWP would enforce noise reduction measures such as using noise reduction elements on construction equipment and minimizing vehicle idling time. Construction may result in trash or microtrash being left behind by the crews; however, with the implementation of mitigation measure BIO-18 (Protect California condor), the potential impact to condors from microtrash would be effectively avoided. As stated in mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program), road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The construction of the towers may stress condors, which is anticipated to be resolved through mitigation measures described in BIO-18 (Protect California condor). LADWP would also implement any reasonable and prudent measures that the USFWS develops for the California condors during the consultation process, and would retrofit existing the existing towers as necessary to safeguard against California condor collisions or electrocutions. Because the tower size is not changing for this component, and only a new circuit is being added, the baseline risks of electrocution or collision are not expected to increase appreciably, and would be reduced by conforming to APLIC (2006) avian safety standards.

General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1).

No other special-status species were found within the new 230 kV circuit 500-foot impact corridor. There are, however, species that have the potential to occur or habitat is within one mile of the impact corridor. These include:

- Arroyo chub (*Gila orcuttii*)
- Bald eagle (*Haliaeetus leucocephalus*)
- California red-legged frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Pallid bat (*Antrozous pallidus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Arroyo toad (*Anaxyrus californicus*)
- California legless lizard (*Anniella pulchra*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Peregrine falcon (*Falco peregrinus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western spadefoot toad (*Spea hammondii*)
- White-tailed kite (*Elanus leucurus*)

Arroyo Chub

There are no reported sightings of this species along this corridor, which passes over Dry Canyon, San Francisquito Canyon, Charlie Canyon, and Bitter Canyon. None of these canyons has perennially flowing water at the point that the power lines pass over. The ANF Land Management Plan (USFS 2005b) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present in San Francisquito Creek at the point that this Project component crosses the creek. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings, should it be present. Indirect impacts to arroyo chub could include habitat degradation. This could occur due to runoff from Project equipment passing over stream crossings just upstream of suitable habitat. Additionally, Project equipment and vehicles could carry non-native plant seeds in their tires or on their undercarriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-

41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Arroyo Toad

No arroyo toads are found within the 500-foot impact corridor or access roads that would be used during construction of the new 230 kV circuit. Designated critical habitat is within Castaic Creek just northeast of the Castaic Power Plant in an area known as Unit 6: Upper Santa Clara River Basin (50 CFR 17). The Project would not span over this area, and access roads would not cross this area. The boundaries of Unit 6 extend to within 0.16 mile from the proposed new 230 kV circuit ROW. Unit 6 is also upstream from the proposed new 230 kV circuit ROW. There may be indirect construction effects to arroyo toad, as a breeding population in Castaic Creek, which is just northeast of where the new 230 kV circuit route ends at Castaic Power Plant, is present. Because adult anurans are known to be active nocturnally and not usually diurnally, it is unlikely that any toads would be present on the surface during construction, assuming construction occurred during daylight hours. Toads may be aestivating within the construction area, but this is unlikely given that observations have shown that inland populations of arroyo toads are more likely to aestivate directly within the streambed rather than dispersing into distant upland habitat (Ramirez 2007). Habitat loss would not occur where this population is, since construction would not enter the area of occupied habitat in Castaic Creek or critical habitat, which is approximately 0.16 mile from the 230 kV Circuit ROW.

Indirect impacts may occur as a result of sedimentation. A watershed analysis was conducted for BRRTP (see the BRRTP Water Resources Technical Report in Volume IV of this Final EIS/EIR). The purpose of this analysis was not to calculate a precise quantity of sediment delivered to catchments within the study area, but to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each Alternative route within the ANF. It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimate of erosion that would occur as a result of construction and operation of the BRRTP. In actuality, much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. In addition, due to the scale of this analysis, the predicted post-Project erosion values do not reflect implementation of general measures or mitigation measures and represent a worst-case scenario. As part of this analysis, a Revised Universal Soil Loss Equation, Version 2 (RUSLE) was selected to predict annual erosion from Project-related ground disturbance. The RUSLE model predicts long-term average soil loss expressed in tons per acre per year. For analysis of erosion resulting from the Project, road construction or improvement of existing roads at least five miles from the ROW were included in this analysis. Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the Alternative routes (e.g., vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated. The new 230 kV circuit would affect the Middle Castaic Creek and Lower Castaic Creek subwatersheds with a combined area of 42,212 acres. Estimated average baseline annual erosion for these subwatersheds is 48.55 tons/acre/year. With construction of the new 230 kV circuit, predicted average annual erosion would be 49 tons/acre/year, an increase of 0.95 percent over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion, leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 (minimize the potential for erosion, siltation and flooding) and HYD-02 (reduce impacts to existing drainage patterns of streams and washes) (Table 4.3.3-1) the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration is considered less than significant for CEQA.

South of the Castaic Reservoir along the 230 kV circuit marginal habitat was identified within Charlie Canyon (POWER 2011); due to its marginal quality, lack of water, and being outside of the ANF, this area was not surveyed. This habitat may be driven through for construction access to tower sites on the northern side of the canyon. It is unlikely that habitat in the streambed would be directly affected beyond changes in the microhabitat resulting from equipment driving through the streambed crossings. If water is present, this could result in increased sedimentation and changes in hydrology. Based on the habitat assessment and known USFWS habitat locations, arroyo toads are not expected to be present in this area (POWER 2011).

General Practices that would reduce short- and long-term effects to the arroyo toad and its habitat include GP-3, GP-4, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to the arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog) (Table 4.3.1-1).

Bald Eagle and Peregrine Falcon

There may be direct or indirect effects to peregrine falcon or bald eagle. Peregrine falcon and bald eagle are both expected to have possibilities of occurring on this alignment due to the abundant open water around Castaic Lake and Castaic Lagoon, although there are no records available for either within the Project area. There are also nesting opportunities for falcons with the buildings and structures around the Castaic Lake/Lagoon region. Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to these species. Direct injury or mortality from construction is not expected based on the lack of recorded sightings of these species. Should any of them nest near the proposed ROW, they may be displaced by construction disturbance, depending on the amount of ambient disturbance in the area, which is greater around Castaic Lake/Lagoon. If this is the case, adults and/or their young would likely need to relocate, which could result in indirect injury or mortality as they move to inhabit new locations. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures would need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006).

General practices that would reduce short-term or long-term effects to peregrine falcon and bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon and bald eagle include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle) (Table 4.3.1-1).

California Legless Lizard

There may be direct or indirect construction impacts to California legless lizard, expected to have a possibility of occurring based on availability of suitable habitat within Dry Canyon and Charlie Canyon. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. While both of these streambeds are intermittent, the presence of riparian vegetation in each (such as mulefat) would indicate that the soil may be moist enough to support this species, for which there are otherwise no records of its presence in the area. Direct injury or mortality of individuals of this species is possible because it hides under leaf litter and other cover, where it would not be seen. Encroachment near riparian areas would be most likely to damage or kill individuals of this species, although open chaparral and even desert scrub may be used by it (Stebbins 2003). In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals more open to injury or mortality through construction. Exposure on the surface during the day or by lighting at night may subject it to predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area that may get trapped in them.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that are not moist enough to support them or do not have suitable microhabitat qualities, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources. If suitable habitat and microhabitat within the area is limited, the carrying capacity may be exceeded and available resources, such as insects for food, may be at higher risk for depletion. To help avoid this to the extent possible, these lizards would be relocated with concurrence and guidance from USFS and/or CDFG, if applicable. It is expected that any relocated lizards would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short-term or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

California Red-legged Frog

The only probable California red-legged frog detected during the 2008 and 2009 protocol surveys was a tadpole found on April 8, 2008 at Site Assessment #1 under the location where the new 230 kV circuit would cross San Francisquito Creek (see Appendix E of the Biological Resources Technical Report 2011). However, because of the lack of any other observed potential California red-legged frog tadpoles, combined with the general inadequacy of the site for this species' breeding requirements, it is likely that the tadpole washed downstream from the known occupied habitat approximately four miles upstream. Due to a sharp rise in precipitation in the vicinity of the unincorporated community of Saugus in the two months preceding the identification of this tadpole, this is a possible scenario (CDEC 2010). In this case, because the habitat at this location is not normally suitable to support this species, it is unlikely to be present, particularly because the site was observed to be dry during subsequent visits. However, should this species be present in this section of San Francisquito Creek again, several construction impacts could occur. Because the tadpole was present in a portion of the creek that is adjacent to a residence and crossing the creek is the only way for the residents to reach their home, this area likely experiences daily vehicle traffic, resulting in periodic disruption of water and stirring of sediment in the stream's substrate. Increasing the number of vehicles passing through this area by adding construction vehicles and equipment would increase the amount of sedimentation in the creek in this area and increase the risk of habitat degradation along the creek through spread of non-native plant seeds around the banks and through vehicular fluid spills. Daily disturbance would reduce the likelihood of frogs being present or breeding in the immediate road crossing, but if egg masses, tadpoles, or frogs are present, then the risk of crushing would be increased. Project mitigation would require a qualified biologist to conduct surveys if habitat or conditions are suitable for California red-legged frog presence, and if found in the vicinity of the stream crossing, the crossing would be excluded from access while water was present. No other areas were found on the new 230 kV circuit route that had the potential to support the California red-legged frog.

Under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing would be installed around any construction sites that are located in areas where red-legged frogs are widely distributed. If any individuals are detected within the construction site, they would be relocated by a qualified and permitted biological monitor. Relocating may result in increased stress to the individual frogs, particularly if suitable habitat such as deep pools or upland dispersal areas within the area are limited. This could also result in exceeding the carrying capacity such that there may be increased competition for available resources such as food, which could put increased strain on the local population. To help avoid this to the extent possible, California red-legged frogs would be relocated with concurrence and guidance from USFWS, CDFG, and/or USFS, as necessary. It is expected that any relocated frogs would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agencies.

Designated critical habitat for the California red-legged frog is within San Francisquito Canyon in an area known as Unit LOS-1 (75 FR 12815 12959). The new 230 kV circuit would not span over this area, nor would construction related traffic travel within this area. The boundaries of Unit LOS-1 is 0.15 mile upstream from the new 230 kV circuit ROW.

California red-legged frogs are not expected to be present or encountered during construction of the new 230 kV circuit. The following General Practices would be implemented to reduce any potential short- and long-term effects to the California red-legged frog and its habitat: GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. During preconstruction surveys and biological monitoring, if the California red-legged frog is found to have a potential to occur or habitat is present, the following mitigation measures would be implemented: AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog) (Table 4.3.1-1).

California Spotted Owl

There may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in Charlie Canyon and Dry Canyon as determined during 2008 and 2009 surveys (POWER 2011). This species is not known to be present in these areas. Habitat degradation and/or loss would occur for this species in Charlie Canyon, as the areas that were determined to be suitable habitat during surveys are alongside the road, possibly resulting in dust deposition and/or branch trimming of trees along this area. This could lead to injury or mortality of any spotted owls in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into unfamiliar or unsuitable areas. Implementation of ANF Land Management Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is implemented into mitigation measure BIO-19 (Protect California spotted owl).

General Practices that would reduce short- or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl) (Table 4.3.1-1).

Coast Horned Lizard

There would be direct or indirect effects to coast horned lizard, expected to be present due to two sightings within 1.5 miles of the 230 kV circuit ROW (CDFG 2011). There is limited suitable habitat for this species, and areas likely to support it are mostly located close to streambeds. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22 (Protect special-status herpetofauna)—and are present under vegetation, on roads, or in burrows may be crushed by foot traffic, vehicles, or heavy equipment. To help avoid or reduce potential impacts, BIO-22, Protect special-status herpetofauna, would require a construction monitor to be present during ground-disturbing activities to salvage coast horned lizards and relocate them to suitable habitat outside the Project impact area. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

Under mitigation measure BIO-22, if any individuals are identified within the Project area, they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where friable ground (for burrowing) may be limited or where harvester ants or other insects (for food) may be scarce, and may place increased strain on any individuals that may be present in the relocation area through increased competition for these resources. If suitable habitat within the area is limited, the carrying capacity may be exceeded and available resources, such as ants for food, may be at higher risk for local depletion. To help avoid this to the extent possible, these lizards would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated lizards would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General Practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include: AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2

(Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal California Gnatcatcher

There may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present in the general area due to several individuals identified near the boat launch ramps on both sides of upper Castaic Lake during 2010 and 2011 BRRTP bird use count surveys conducted by POWER, one recorded sighting within 1.3 miles of the proposed ROW (CDFG 2011), and suitable coastal California gnatcatcher habitat identified during 2008 habitat surveys to the east of Castaic Lake (POWER 2010). Construction-related impacts could include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary. Because of the location of habitat patches identified in 2008 and those where individuals were located in 2010 and 2011, it is possible that some of these could be destroyed or degraded by construction, as some are directly within the corridor or nearby. No designated critical habitat for this species is along the proposed new 230 kV circuit corridor. Preconstruction surveys would be conducted to determine usage of these areas by coastal California gnatcatchers, and appropriate temporal, spatial, and/or noise limitations would be imposed on construction in accordance with mitigation measure BIO-15 (Protect coastal California gnatcatcher and its habitat). Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary. Human presence following construction is not expected to noticeably increase, as construction in these areas would all be conducted on existing transmission line towers.

General Practices that would reduce short- or long-term effects to the California gnatcatcher include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California gnatcatcher include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat) (Table 4.3.1-1).

Coastal Rosy Boa and Two-striped Garter Snake

There may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is likely to occur due to availability of suitable vegetative habitat, rocky outcrops, and intermittent streambeds primarily in areas close to San Francisquito and Charlie Canyons, while two-striped garter snake has a possibility of occurring based on two individuals identified approximately three miles away by POWER biologists in 2009 in Fish Canyon. There is a lack of known perennial streambeds in the area along this corridor that could support this species throughout the year. Moving rocks may also result in injury or mortality if any snakes are between or adjacent to rocks. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Scaring away rodents or herpetofauna could also cause reductions in food supply for any snakes in or near the ROW, while scaring snakes into the open may cause increases in predation. Finally, individuals may be unintentionally run over by construction traffic should they be undetected basking on the ground.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if individuals of either of these species are identified within the Project area, they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where aquatic and rocky habitat may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, these snakes would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated snakes would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-9, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Grasshopper Sparrow

There may be direct or indirect effects to grasshopper sparrow, expected to be present on the new 230 kV corridor due to a 2005 recorded sighting approximately 0.6 mile from the line in the hills west of San Francisquito Canyon (CDFG 2011). Because this component is adding a new conductor to an existing transmission line and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and minimal as required for construction access. Because this species nests and forages on the ground in dense grassland (CDFG 2008), any required clearing of dense grassland may have direct impacts on individual birds, including injury, mortality, stress, or disruption of essential activities. Preconstruction surveys for special-status species would help determine if grasshopper sparrow is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because this species is only present in the area during the nesting season, if LADWP avoids the nesting season, it is expected that there would be no direct impacts to this species outside of habitat degradation, which could occur through the spread of noxious weeds in the grasshopper sparrow's preferred grassland habitat. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Least Bell's Vireo
There would be direct or indirect effects to least Bell's vireo, which has the possibility to occur due to sightings 0.5 mile away in a riparian corridor just west of Castaic Lagoon on ten separate occasions, the highest of which consisted of 15 birds. However, the transmission line is approximately 375 feet higher in elevation—and set back from the top of a hill—than the patch of suitable habitat where the vireos were previously identified, which is at the bottom of a canyon. It is not expected that any vegetation removal in this area would be required, as the corridor is not close enough and the paved road would likely be maintained by management of the Castaic Lake State Recreation Area, of which this road is a part. There may be small amounts of tree trimming required on the edge of the road if equipment cannot pass without hitting branches. Movement of vehicles and heavy equipment on the Grasshopper Fire Road, which is directly adjacent to the riparian strip where vireos have been known to occur, may stress individuals and cause dispersal, which could also result in nest abandonment if any active nests are present within the area. Further effects to least Bell's vireos or their habitat are not expected in this area due to its topographical features. Because the paved road that passes adjacent to the vireo sighting location is a public road within the Castaic Lake State Recreation Area, birds in the area likely have become acclimated to periodic disturbances from vehicular traffic on this roadway. Should construction vehicles enter and exit the ROW in this area from a different road, of which there are several in the area that could be used if necessary, direct impacts from construction to any vireos that may be present are expected to be negligible. There is no other suitable habitat for this species near this corridor.

Construction on towers and grading of new or existing access roads may result in habitat loss if there are any other riparian vegetation areas directly under the new 230 kV circuit route which could be used by this species. Construction vehicles and equipment could transport non-native plant seeds on their tires or carriages and cause non-native plant species to spread into areas where they may be less abundant or not present, such as within the areas that contain suitable habitat for least Bell's vireo. Dust deposition onto surrounding vegetation could affect the ability or effectiveness of plants to photosynthesize. Long-term periodic human presence and use of access roads by maintenance or security vehicles may continue to result in habitat degradation as described above, but the effects would be relatively minor, as most activity would likely consist of passing by while patrolling the ROW, and should not result in off-road activity—such as foot traffic—unless a problem is discovered. If construction is occurring during nesting season, preconstruction/protocol surveys would attempt to locate any nests, in compliance with mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). However, any active nests unnoticed within the construction corridor may be at risk for destruction, which could result in injury or mortality.

General Practices that would reduce short- or long-term effects to these bird species and to riparian habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) (Table 4.3.1-1).

Loggerhead Shrike

The loggerhead shrike has a possibility of occurring due to availability of open, pastoral habitat in areas along the Grasshopper Fire Road and a potential sighting by a non-ornithologist POWER biologist in fall 2009 in Castaic Creek close to the northern end of Elderberry Forebay (POWER 2011). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation, which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring would locate any nests within shrubs or trees in the area, although if any nests are not located, injury or mortality of individuals could still result. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction. Nest abandonment can lead to indirect injury or mortality of the young. Effects from BRRTP would be minimized by avoiding construction near nesting birds and the implementation of mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]).

General Practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

There may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. Pallid bat, Townsend's big-eared bat, and western mastiff bat have possibilities of occurring based on the availability of suitable habitat, such as roosting opportunities on the existing power lines, in buildings around Castaic Lake and Lagoon, and on rocky outcrops near Castaic Power Plant; foraging opportunities in the chaparral and grasslands along this alignment; and abundant water around Castaic Lake and Lagoon. Construction work on the new 230 kV circuit is not expected to notably reduce suitable habitat for the bat species named above. Foraging habitat may be degraded as a result of the spread of non-native species, dust deposition, or soil compaction, but habitat effects are expected to be relatively low due to the probable low amount of disturbance that would result from adding the additional conductor to the existing transmission lines. Should spur roads need to be constructed or reestablished, there may be habitat loss or degradation in isolated locations. Rocky roosting habitat is minimal along this area. Although the western side of San Francisquito Canyon has rocky habitat, this is primarily several miles north of this corridor. The few buildings directly under or adjacent to this ROW are primarily homes in San Francisquito Canyon, and the likelihood of bats roosting in them is low; if bats are present, temporary construction effects would likely not be considerably more disturbing than daily residential activity. However, if bats are present roosting around the building and/or yard that are approximately two linear miles south of the northern end of this corridor, which are not public areas, there may be a greater disturbance from construction presence on nearby towers, potentially causing bats to vacate the area.

Under mitigation measure BIO-21 (Protect sensitive bat species), if any bat roosts or hibernacula are identified within the Project area, LADWP may construct a replacement roost site with the assistance of a qualified biologist. According to the mitigation measure, the replacement sites would be located close to the originals and would be left open to allow bats to find and colonize them on their own; the existing roost sites in the construction area would only be closed after the bats had left. This may result in some stress to the bats or the system, but because the bats would be colonizing the replacement sites on their own and the sites would be located close to the originals, it is less likely that this would result in any severe effects or any risks to exceeding carrying capacity. Alternative roost sites would be chosen and constructed with concurrence and guidance from USFS and/or BLM, if applicable.

General practices that would reduce short-term or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short-term or long-term effects to special-status bat species include HYD-1

(Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

San Diego Black-tailed Jackrabbit

There may be direct or indirect effects to San Diego black-tailed jackrabbit, expected to be present due to a recorded sighting within 0.25 mile of the proposed ROW in the hills west of San Francisquito Canyon (CDFG 2010). There is suitable shrubby habitat to support this species along most of the length of this corridor. Tower construction and grading of new or existing access roads would cause habitat degradation and destruction for this species. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk.

General practices that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds into), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Tricolored Blackbird

There may be direct or indirect effects to tricolored blackbird, which is expected to have a possibility of occurring on the new 230 kV circuit corridor based on availability of suitable habitat in areas of open water. Castaic Creek adjacent to the Castaic Power Plant when it is fully vegetated and inundated, in particular, would provide suitable habitat for this species. This species may also occur in the vicinity of Castaic Lagoon/Lake, but there are no records indicating such. Foraging behavior may be directly affected by construction through or close to any prominent foraging grounds if there is suitable habitat in Grasshopper Canyon. Preconstruction surveys for special-status species would help determine if tricolored blackbird is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Because construction would consist of the installation of a new conductor and not of new towers, habitat loss in general is expected to be minimal and only as needed for construction access. However, individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Breeding and nesting areas are unlikely to be directly affected, as Project construction would not be passing through any areas of open, marshy water. However, nesting areas may be disturbed by visual or aural effects, such as construction activity and construction noise. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Western Spadefoot Toad

There may be direct or indirect effects to western spadefoot toad, expected to be present on this alignment due to several sightings within one mile of the proposed ROW, one of which was located in the hills to the west of San Francisquito Canyon and another at a marked reservoir in Grasshopper Canyon (CNDDB 2011). There is also suitable grassland and/or chaparral habitat throughout the alignment and sandy riparian habitat around Charlie Canyon and Castaic Creek, and aural identification of a spadefoot toad call during POWER's 2009 surveys, though without visual confirmation (POWER 2010a). Tower construction and grading of new or existing access roads would destroy or degrade grassland or shrubby habitat that may be utilized by this species. The streambed in Charlie Canyon may still experience effects from vehicular traffic, such as increased sedimentation or hydrological changes, if wet at the time of construction. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area. Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area, they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that do not contain the characteristics necessary for population sustainability, such as areas that have the substrate to support temporary pools. It may also place increased strain on any individuals that may be present in the relocation area through increased competition for resources, including breeding habitat. If suitable habitat within the area is limited, the carrying capacity may be exceeded and may put additional strain on population growth. To help avoid this to the extent possible, individuals would be relocated with concurrence and guidance from BLM and/or CDFG, if applicable. It is expected that any relocated spadefoots would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short-term and long-term effects to western spadefoot toad include GP-5, GP-9, GP-10, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-54, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

There may be direct or indirect effects to white-tailed kite, expected to have a possibility of occurring on the new 230 kV corridor based on the availability of suitable habitat in the vicinity of Castaic Lake and Grasshopper Canyon. Dense-topped trees including oaks and conifers are scattered and clustered in patches along Grasshopper Canyon. These could provide nesting or perching opportunities for kites. Because this component is adding a new conductor to an existing transmission line and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and only minimal as required for construction access. Terrestrial foraging habitat such as grasslands, meadows, and farmlands may be degraded as a result of construction, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Reconductoring of BR-RIN Transmission Line

Reconductoring would occur along the existing BR-RIN 230 kV transmission line with larger conductors from the Barren Ridge Switching Station to Rinaldi Substation. By utilizing the existing structures and ROW, the Project would minimize permanent impacts from the reconductoring portion of the Project and still allow additional transmission capacity along the corridor. Temporary impacts would occur where equipment staging, line work, or construction traffic access would be needed. The upgrade of the existing BR-RIN would involve 13 miles of NFS lands and four miles of BLM-managed public lands. Reconductoring would occur along all Alternative alignments for the new 230 kV transmission line, and additionally extend south from the proposed Haskell Canyon Switching Station to the Rinaldi Substation. The reconductoring alignment from Haskell Canyon to Rinaldi Substation is analyzed below.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either side of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.1-5). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impact to the ROW within any locations that these resources are known to occur. Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect or direct impacts that may occur from construction vehicles or equipment accessing the Project site. For species that were reviewed and considered to be absent or unlikely to occur are not analyzed below. However, these species are analyzed in detail in the Biological Technical Report in Volume IV of this Final EIS/EIR.

TABLE 4.3.1-5. POTENTIAL IMPACTS FROM THE RECONDUCTORING BR-RIN 230 KV TRANSMISSION LINE 500-FOOT IMPACT CORRIDOR

Reconductoring	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
California condor	1.3	1.3	0.3	0.6
California gnatcatcher	3.3	3.3	0.7	1.1
Desert tortoise	29.9	29.9	3.7	3.7
Coast horned lizard	1.3	1.3	0.2	0.2
Unarmored three-spine stickleback	1.3	1.3	0.3	0.6
USFS GIS Modeled Wildlife Habitat				
Arroyo toad	27.3	27.3	4.62	6.7
California red-legged frog	22.1	22.1	3.8	5.6
Least Bell's vireo	25.4	25.4	4.2	6.0
Southwest willow flycatcher	34.5	34.5	6.0	8.8
Unarmored three-spine stickleback	7.15	7.15	1.8	3.3
Non-modeled Wildlife Habitat				
California gnatcatcher	39.0	39.0	8.9	15.8

Reconductoring	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Wildlife Range				
Desert tortoise	83.2	83.2	10.2	10.2
Mohave ground squirrel	276.3	276.3	34.2	34.5
Riparian Conservation Area				
Yes	44.9	44.9	7.3	10.3
Wildlife Corridor				
Yes	11.1	11.1	2.9	5.4
USFWS Critical Habitat				
California gnatcatcher	20.8	20.8	5.2	9.5
Known Special-Status Plant Species on ANF lands				
Short-joint beavertail	11.7	11.7	1.8	2.4
Slender mariposa lily	11.1	11.1	2.2	3.5
Joshua Trees Present				
Yes	83.9	83.9	10.3	10.3
Vegetation				
Agricultural land	79.0	79.0	10.4	11.5
California annual grassland	24.3	24.3	3.8	5.1
Chamise chaparral	40.5	40.5	10.4	19.4
Barren/developed	80.2	80.2	13.0	18.3
Joshua tree woodland	34.3	34.3	4.2	4.2
Mojave creosote bush scrub	148.3	148.3	18.3	18.3
Mojave wash scrub	8.3	8.3	1.0	1.0
Riversidian sage scrub	25.4	25.4	6.1	11.1
Southern mixed chaparral	37.8	37.8	8.7	15.5
Mapped Weed Species on ANF lands				
Blessed milkthistle	0.7	0.7	0.1	0.1
Blessed thistle	2.6	2.6	0.3	0.3
Cistus creticus	0.7	0.7	0.1	0.1
Common gum cistus	0.7	0.7	0.1	0.1
Indian hedgemustard	9.8	9.8	1.4	1.7
Prickly Russian thistle	4.6	4.6	0.8	1.3
Saltcedar	0.7	0.7	0.1	0.1
Smilograss	4.6	4.6	0.7	1.0
Spanish broom	2.0	2.0	0.2	0.2
Tocalote	4.6	4.6	0.7	0.8
Tree tobacco	1.3	1.3	0.3	0.4
Riparian Communities				
Southern coast live oak riparian forest	9.0	9.0	2.4	4.4
Southern riparian scrub	5.9	5.9	1.3	2.3
Southern sycamore alder riparian woodland	3.5	3.5	0.8	1.5
Southern willow scrub	1.0	1.0	0.1	0.1
Biological Protected Area				
Santa Susana Mountains/Simi Hills SEA	15.6	15.6	3.8	7.0
San Andreas Rift Zone SEA	12.4	12.4	2.7	4.6
Santa Clara River SEA	7.8	7.8	1.6	2.6

Impacts to Native Vegetation

The BR-RIN reconductoring corridor contains California annual grassland, Riversidian sage scrub, chamise chaparral, southern mixed chaparral, Southern Coast live oak riparian, scrub oak chaparral, Mojave creosote bush scrub, rabbitbrush scrub, Mojave wash scrub, Joshua tree woodland, and ruderal vegetation (Table 4.3.1-6). While LADWP intends to avoid native plant communities to the maximum extent possible and would flag resources for avoidance, reconductoring of the BR-RIN transmission line would still result in disturbance to a variety of native plant communities. See Impacts to Native Vegetation under the new 230 kV circuit above for discussion of permanent versus temporary impacts and expected direct and indirect effects to native vegetation for reconductoring of the BR-RIN transmission line.

TABLE 4.3.1-6. TEMPORARY AND PERMANENT IMPACTS TO VEGETATION COMMUNITIES ON THE BR-RIN RECONDUCTORING CORRIDOR

Vegetation	Jurisdiction	Total Acreage of Vegetation Type in Jurisdiction	Minimum Temporary Disturbance (Ac.)	Maximum Temporary *Disturbance* (Ac.)	Minimum Permanent Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)
Agricultural land (Segment ABG)	Private	736.94	79.04	79.04	10.41	11.53
California annual grassland (Segment ABG)	Private	226.28	24.27	24.27	3.78	5.10
Chamise chaparral (Segment ABG)	USFS	304.26	32.65	32.65	8.54	16.07
Barren/developed (Segment ABG)	Private	97.83	10.49	10.49	1.86	2.81
Barren/developed (Segment ABG)	USFS	235.69	25.28	25.28	4.86	7.77
Joshua tree woodland (Segment ABG)	Private	319.89	34.31	34.31	4.22	4.22
Mojave creosote bush scrub (Segment ABG)	BLM	215.91	23.16	23.16	2.85	2.85
Mojave creosote bush scrub (Segment ABG)	Private	1166.83	124.90	124.90	15.37	15.37
Mojave wash scrub (Segment ABG)	BLM	17.35	1.86	1.86	0.23	0.23
Mojave wash scrub (Segment ABG)	Private	60.00	6.43	6.43	0.79	0.79
Riversidian sage scrub (Segment ABG)	Private	6.53	1.19	1.19	0.31	0.59
Riversidian sage scrub (Segment ABG)	USFS	85.68	10.30	10.30	2.69	5.07
Southern coast live oak riparian forest (Segment ABG)	USFS	61.53	6.60	6.60	1.73	3.25
Southern mixed chaparral (Segment ABG)	Private	39.56	4.24	4.24	1.03	1.88
Southern mixed chaparral (Segment ABG)	USFS	74.64	8.01	8.01	1.69	2.86
Southern riparian scrub (Segment ABG)	USFS	6.17	0.66	0.66	0.17	0.33

Vegetation	Jurisdiction	Total Acreage of Vegetation Type in Jurisdiction	Minimum Temporary Disturbance (Ac.)	Maximum Temporary *Disturbance* (Ac.)	Minimum Permanent Disturbance (Ac.)	Maximum Permanent Disturbance (Ac.)
Southern sycamore alder riparian woodland (Segment ABG)	Private	3.12	0.53	0.53	0.12	0.21
Southern sycamore alder riparian woodland (Segment ABG)	USFS	19.61	2.34	2.34	0.54	0.95
Chamise chaparral (Segment K)	Private	73.31	7.86	7.86	1.85	3.32
Barren/developed (Segment K)	Private	400.77	43.18	43.18	6.11	7.45
Riversidian sage scrub (Segment K)	Private	129.39	13.88	13.88	3.09	5.40
Southern coast live oak riparian forest (Segment K)	BLM	0.34	0.04	0.04	0.01	0.02
Southern coast live oak riparian forest (Segment K)	Private	22.20	2.38	2.38	0.62	1.17
Southern mixed chaparral (Segment K)	BLM	0.06	0.01	0.01	0.00	0.00
Southern mixed chaparral (Segment K)	Private	237.78	25.50	25.50	5.98	10.71
Southern riparian scrub (Segment K)	Private	48.38	5.19	5.19	1.13	1.95
Southern sycamore alder riparian woodland (Segment K)	Private	6.06	0.65	0.65	0.17	0.32
Southern willow scrub (Segment K)	Private	9.10	0.98	0.98	0.12	0.12

In total, the reconductoring would permanently disturb a maximum of approximately 8.3 acres of vegetation identified as rare and worthy of consideration by the CDFG (104.3 acres of non-rare vegetation) and would temporarily impact a maximum of approximately 19.4 acres of rare vegetation (478.2 acres of non-rare vegetation). Types of California vegetation that are considered to be rare and worthy of consideration can be found in CDFG's "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Additional acreages of land disturbance may occur, but the vegetation communities impacted are unknown at this time as final engineering has not been conducted. Table 4.3.1-5 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of the reconductoring within all jurisdictions that occur in the corridor.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

The General Practices (GPs), described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion GPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Special-Status Plant Impacts

Two special-status plant species were within the reconductoring corridor during surveys conducted in 2008, 2009, and 2010 (POWER 2011):

- Short-joint beavertail
- Slender mariposa lily

There are 59 special-status plant species that have the potential to occur within the reconductoring corridor:

- Alkali mariposa lily (*Calochortus striatus*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- Chaparral ragwort (*Senecio aphanactis*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Desert cymopterus (*Cymopterus deserticola*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Braunton's milk-vetch Braunton's milk-vetch (*Astragalus brauntonii*)
- California satintail (*Imperata brevifolia*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Creamy blazing star (*Mentzelia tridentata*)
- Delicate bluecup (*Githopsis tenella*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Greata's aster (*Symphyotrichum greatae*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)

- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

For a discussion of the potential direct and indirect impacts to special status plants that may be found within the reconductoring corridor, see above language for the new 230 kV circuit, as impact types are expected to be the same. Both the new 230 kV circuit and reconductoring would be conducting work on existing towers and are not expected to have the same probability of impact on special-status plants as the proposed new transmission line construction. This is because new access roads and tower sites should not be necessary. General practices that would reduce short- or long-term effects to special-status plant species or their habitat include GP-38, GP-39, GP-40, GP-48, GP-51, GP-52, GP-53, GP-59, GP-60, GP-61, GP-62, GP-67, and GP-69.

Mitigation measures that would reduce short- or long-term effects to special-status plant species or their habitat include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

For a discussion of invasive plant and herbicide use impacts on native vegetation, common wildlife, and special-status plants and wildlife within the reconductoring corridor, see above language for the new 230 kV circuit, as impact types are expected to be very similar. Because the reconductoring would occur on existing structures, it is not expected to have nearly the same magnitude of impact as the proposed new transmission line construction.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacts to native vegetation communities) and BIO-2 (Prevent the spread of invasive weeds) (Table 4.3.1-1). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

Wildlife Impacts

Three special-status wildlife species are known to be present within the BR-RIN Transmission Line reconductoring impact corridor (Table 4.3.1-5):

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)
- Coastal California gnatcatcher (*Polioptila californica californica*)

American Badger

There may be direct or indirect construction impacts to American badger, expected to be present based on the identification of active and inactive badger burrows during surveys conducted in and around SCE's Antelope-Pardee Project in the Antelope Valley (LSA 2007a). The American badger occurs along the northern portion of all action Alternatives and the reconductoring corridor. Therefore, impacts to this species would be consistent within each action Alternative, and the same for each action Alternative below. General practices that would reduce short- or long-term effects to American badger include GP-27, GP-38, GP-40, GP-50, GP-59, GP-60, GP-61, GP-67, and GP-69. Mitigation measures that would reduce short- or long- term effects to American badger include BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox).

Coastal California gnatcatcher

Designated critical habitat for the coastal California gnatcatcher is within the proposed reconductoring component route of the Project area just south of the ANF (72 FR 72009 72213). Approximately 2.9 miles of the Project are within Unit 13 of the designated critical habitat for the coastal California gnatcatcher. Segment K of the reconductoring corridor is an existing line with ongoing maintenance activities. Should spur roads need to be re-established, they would need grading and clearing as necessary for construction access. This could result in loss or alteration of designated critical habitat. No disturbance is expected outside the existing ROW, so any habitat that may need to be cleared for construction would be inside the ROW. However, the habitat is somewhat disturbed in this area due to general transmission maintenance activities, such as tower access or brush-related fire prevention. Some towers may need to be modified or replaced either above- or below-ground to accommodate a new, heavier conductor. This would potentially require ground disturbance at these locations, which could result in possible habitat removal or disturbance to individual birds that may temporarily leave the area because of construction activities. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Dust control measures would be implemented to help reduce this impact. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest.

General Practices that would reduce short- or long-term effects to the California gnatcatcher include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California gnatcatcher include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat) (Table 4.3.1-1).

Desert Tortoise

The desert tortoise occurs along the northern portion of the BR-RIN transmission line reconductoring corridor. Construction activities that result in direct mortality or degradation of habitat utilized by this species, if present, would be considered a "take" of federally and State-listed species as described above and would constitute an impact authorized only through the context of an incidental take statement in the Biological Opinion issued by the USFWS. The desert tortoise occurs along the northern portion of all action Alternatives and the reconductoring corridor. Preconstruction surveys would be conducted within suitable areas in the Project area; burrows within the Project area would be excavated and tortoises relocated, while burrows within 100 feet of the construction zone would be flagged for avoidance and monitoring during construction. Exclusion fencing would be installed along the construction boundaries to keep tortoises from entering the area during construction. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. LADWP would be required to minimize disturbance and vegetation removal to the extent necessary to complete construction and would be restricted to the approved Project area. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. To reduce scavenger attraction, workers would dispose of trash regularly off-site. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. However, moving desert tortoise from harm's way will only occur on the transmission line portions of the project and refers to moving the desert tortoise the minimum distance necessary to place it in a safe location within its home range. Impacts to this species would be consistent within each action Alternative, and the same for each action Alternative below. General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

No other special-status species were found within the BR-RIN reconductoring 500-foot impact corridor. There are, however, species that are present, have the potential to occur, or have habitat within one mile of the impact corridor. These species include:

- Arroyo chub (*Gila orcuttii*)
- California condor (*Gymnogyps californianus*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Golden eagle (*Aquila chrysaetos*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mountain plover (*Charadrius montanus*)
- Peregrine falcon (*Falco peregrinus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Burrowing owl (*Athene cunicularia*)
- California red-legged frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Pallid bat (*Antrozous pallidus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)

- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Swainson's hawk (*Buteo swainsoni*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western red bat (*Lasiurus blossevillii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Tricolored blackbird (*Agelaius tricolor*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- White-tailed kite (*Elanus leucurus*)

Arroyo Chub

Under the reconductoring corridor, there may be direct or indirect impacts to the arroyo chub, with a possibility of occurring based on its known presence within the Drinkwater and/or Dam Reaches of San Francisquito Creek over the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. The ANF Land Management Plan (USFS 2005b) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings at Bee Canyon, should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

Burrowing Owl

Under the reconductoring corridor, there may be direct or indirect construction impacts to burrowing owl, likely to occur based on the presence of suitable habitat and known occurrences of this species and its burrows in the Antelope Valley. Grading of new or existing access roads would result in habitat fragmentation and vegetation loss, which would result in a degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls.

Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16 (Protect burrowing owl), would identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls. Where construction occurs near residential areas, it may draw the attention of scavengers or domesticated animals, increasing risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours.

Under mitigation measure BIO-16 (Protect burrowing owl), if any occupied burrows cannot be avoided by construction, the resident owls will be passively relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that are not moist enough to support them or do not have suitable microhabitat qualities, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources. If suitable habitat and microhabitat within the area is limited, the carrying capacity may be exceeded and available resources, such as insects for food, may be at higher risk for depletion. To help avoid this to the extent possible, the burrowing owls would be relocated with concurrence and guidance from USFS and/or CDFG, if applicable. It is expected that any relocated owls would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

California Condor

The California condor is expected to be present based on GIS data supplied by USFWS that shows condor presence particularly around the San Gabriel and Santa Susana Mountains on the southern end of the Project (USFWS 2008, USFWS 2009). Road grading would not be necessary, as access roads are already well-maintained along the reconductoring corridor. Construction presence may disturb or discourage condors that are foraging nearby and that see or hear the crew members from above. Construction presence would be temporary and in a small part of the overall potential foraging area, however, as juveniles have been measured foraging over 140 miles and nesting pairs typically forage 31 to 44 miles in a single day (USFWS 1996b), and can likely adapt to the relatively minor change. Construction for the Project could cause short-term temporary behavioral avoidance of the area due to increased activity or noise. Condors are known to become alarmed by loud noises from distances of over one mile, and may avoid coming close to or nesting near these areas or may alter their behavior to avoid the activity (USFWS 1996). However, Project construction should not involve overly excessive noises such as blasting, and LADWP would enforce noise reduction measures such as using noise reduction elements on construction equipment and minimizing vehicle idling time. Construction may result in trash or microtrash being left behind by the crews. Any leftover trash or microtrash may be ingested by condors, which in turn could be regurgitated for chicks to feed on, leading to chick mortality (USFS 2008c). This short-term impact would be addressed by implementation of BIO-18 (Protect California condor) and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program), road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. Based on the low number of sightings in this area, it is highly unlikely that California condors are nesting near the proposed ROW (USFWS 2008, USFWS 2009). If nesting condors were found, mitigation measure BIO-18 would be implemented. The reconductoring of this transmission line is not likely to substantially increase the potential for electrocution or collision for California condors, as this Project component is only upgrading the existing conductor. However, it is likely that some towers may need to be taller as a result of the reconductoring, which would be a change in the existing conditions. If condors were habituated to the existing conditions, this change could result in negative interactions with towers. However, implementation of the General Practices and mitigation measures to reduce short-term and long-term effects to California condors listed below would minimize this risk by ensuring that the conductors are spaced apart to eliminate the potential for electrocution, and any portions of the line that are found to present a collision risk would be marked with flight diverters to minimize collision risk.

General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors.

California Red-legged Frog

Based on known locations and protocol survey results of California red-legged frog in the vicinity of the BR-RIN reconductoring corridor, direct effects to individual frogs are not expected (POWER 2010). In the Project area California red-legged frogs are only known to occur within the St. Francis Dam reach of San Francisquito Creek and within critical habitat unit LOS-1 (75 FR 12815 12959), which is several miles downstream of where the existing BR-RIN reconductoring corridor would cross into San Francisquito Canyon, and would be separated from the reconductoring corridor in Dry Canyon by a steep mountainside. In addition, the morphology of San Francisquito Creek is typical of a semi-arid region where flow is extremely variable and sediment flux is highly episodic. The total long-term coarse sediment yield for the range of flows for San Francisquito Creek was found to be greater than 0.0625 mm (tons/day)

(Stillwater Sciences 2009). Therefore, it was determined that the designated critical habitat unit LOS-1 would not be affected by construction or resulting sedimentation.

Based on protocol surveys, potential habitat was found directly under the transmission line in Dry Canyon in an area known as Drinkwater Flat, where a perennial section of streambed is within coast live oak riparian woodland. The transmission line would cross directly through this area, which could result in habitat loss or degradation depending on exact availability of existing access roads.

California red-legged frogs are not expected to be present or encountered during construction, and the above scenarios are unlikely. Construction could result in habitat degradation as a result of increased non-native plant species due to plant seeds attaching to vehicle tires or carriages and falling off in streambeds. Dust raised by vehicles or construction of transmission towers or access roads could settle on surrounding vegetation, possibly reducing the effectiveness of individual plants' photosynthetic processes. Under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing would be installed around any construction sites that are located in areas where red-legged frogs are widely distributed. If any individuals are detected within the construction site, they would be relocated by a qualified and permitted biological monitor. Relocating may result in increased stress to the individual frogs, particularly if suitable habitat such as deep pools or upland dispersal areas within the area are limited. This could also result in exceeding the carrying capacity such that there may be increased competition for available resources such as food, which could put increased strain on the local population. To help avoid this to the extent possible, California red-legged frogs would be relocated with concurrence and guidance from USFWS, CDFG, and/or USFS, as necessary. It is expected that any relocated frogs would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agencies. Habitat degradation may occur after the Project has been constructed due to ongoing maintenance and security patrols, but it is expected that patrols would likely stay on the main access road unless a problem is discovered that requires individual tower access.

USFWS designated critical habitat for the California red-legged frog is within San Francisquito Canyon in an area known as Unit LOS-1 (75 FR 12815 12959). The Project would not span over this area and the access road going through the area, Forest Road 5N27, would not be used during construction. The boundaries of Unit LOS-1 extend to within 0.20 mile from the proposed new 230 kV centerline.

General practices that would reduce short- and long-term effects to California red-legged frog and its habitat include GP-3, GP-4, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog (Table 4.3.1-1).

California Spotted Owl

There may be direct or indirect effects to California spotted owl, which could possibly occur within the ANF near the BR-RIN reconductoring corridor due to availability of suitable habitat in San Francisquito Canyon, Clearwater Canyon, Grass Mountain, Pettinger Canyon, Spunky Canyon, Baird Canyon, and Craig Spring as determined during 2008 and 2009 surveys (POWER 2011) Habitat degradation and/or loss would occur for this species on this corridor, as many of the areas that were determined to be suitable habitat during surveys are directly within the survey corridor. These may be impacted by construction if they cannot be avoided, such as by tree trimming where necessary for equipment access. This could, by extension, lead to injury or mortality of any spotted owls in the affected trees. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into unfamiliar or unsuitable areas; however, implementation of land management plan standards and mitigation measures should minimize impacts to nesting spotted owls. General practices that would reduce short- or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan),), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl) (Table 4.3.1-1).

Coast Horned Lizard

There would be direct or indirect effects to coast horned lizard, expected to be present due to numerous sightings within San Francisquito Canyon by POWER biologists in 2009, including several near Fire Camp 14 and another near South Portal Canyon. General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-24, GP-41, GP-42, GP-43, GP-48, and GP-49. Grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality. Removal of chaparral for the grading of access roads would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards undetected by preconstruction surveys—in compliance with mitigation measure BIO-22 (Protect special-status herpetofauna)—and present under vegetation, on roads, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal Rosy Boa, San Bernardino Ringneck Snake, and Two-striped Garter Snake

Under the BR-RIN reconductoring, there may be direct or indirect effects to coastal rosy boa, San Bernardino ringneck snake, or two-striped garter snake. San Bernardino ringneck snake has a possibility of occurring based on availability of suitable rocky habitat particularly along the western side of San Francisquito Canyon and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009 near LADWP's Power Plant 1, while two-striped garter snake is likely to occur based on several perennial water stretches in San Francisquito Canyon (between South Portal Canyon and Bee Canyon and in the St. Francis Dam Reach of San Francisquito Creek) and Dry Canyon (Drinkwater Flat). Grading of access roads would result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality to snakes between or adjacent to rocks. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may increase predation. Finally, individuals may be unintentionally run over by construction traffic should they be undetected basking on the ground. General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if individuals of any of these species are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where aquatic, moist, or rocky habitat may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, these snakes would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated snakes would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to San Bernardino ring neck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ring neck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Desert Kit Fox

Under the reconductoring corridor, there would be direct or indirect construction impacts to desert kit fox, likely to occur due to numerous signs and habitat identified by POWER during 2008 desert habitat surveys in the Mojave Desert, including skeletal remains (POWER 2011). The desert kit fox signs occurred along the northern portion of the reconductoring corridor. Implementation of this portion of the Project may result in injury or mortality as a result of crushing by vehicles or equipment. New towers are not expected to be constructed, and roads would not be graded unless the existing access is damaged at the time of construction. Habitat loss would be minimal and would only occur in cases where new grading is required; habitat degradation may occur as a result of the spread of non-native plant seeds. Kit foxes in or near the existing ROW may become stressed as a result of the human activity and temporarily vacate the area or retreat into burrows if active diurnally during construction. However, because this is only a reconductoring operation, the presence of humans would be of a relatively short duration. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys for burrows within the construction areas would be conducted by a qualified biologist; if any occupied burrows are found, construction would be avoided in this area during the breeding season if feasible. General practices that would reduce short- or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Golden Eagle, Peregrine Falcon, and Swainson's Hawk

There may be direct or indirect effects to golden eagle, peregrine falcon, or Swainson's hawk. Golden eagle is expected to be present based on multiple recorded sightings within the Alta-Oak Creek Mojave Project area, located west of and partially overlapping the BR-RIN reconductoring corridor (Kern County 2009). Swainson's hawk and peregrine falcon both have a possibility of occurring on the BR-RIN reconductoring corridor due to available water sources at Bouquet Reservoir and suitable open grassland and shrubby habitat in the northern areas of the corridor in the Antelope Valley. There are also nesting opportunities for falcons on the buildings and structures throughout the lower portion of the corridor, such as residences or other buildings in the hills, and existing transmission lines. Grading of new or existing access roads would result in vegetation and habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater in the central (Antelope Valley) and southern (San Francisquito Canyon) areas than it is in the northern (Mojave) portion or the far southern forested portion of the reconductoring corridor. If this is the case, adults and/or their young would likely need to relocate, which could result in indirect injury or mortality as they move to inhabit new locations; however, implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Conductor replacement would have no effect on raptor species. General practices that would reduce short- or long-term effects to Swainson's hawk and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Swainson's hawk and peregrine falcon include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to Raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Grasshopper Sparrow

There may be direct or indirect effects to grasshopper sparrow, expected to have a possibility of occurring on the BR-RIN reconductoring corridor due to availability of suitable habitat in locations such as Leona Valley and along the proposed ROW south of Bee Canyon. Because this component is a reconductoring and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and minimal as required for construction access. Because this species nests and forages on the ground in dense grassland (CDFG 2008), any required clearing of dense grassland may have direct impacts on individual birds, including injury, mortality, stress, or disruption of essential activities. Preconstruction surveys for special-status species would help determine if grasshopper sparrow is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because this species is only present in the area during the nesting season, if LADWP avoids the nesting season, it is expected that there would be no direct impacts to this species outside of habitat degradation, which could occur through the spread of noxious weeds in the grasshopper sparrow's preferred grassland habitat. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Le Conte's Thrasher

There may be direct or indirect effects to Le Conte's thrasher, expected to be present on the BR-RIN reconductoring corridor based on multiple recorded occurrences from 2005 within 3.5 miles of the proposed ROW in the Antelope Valley (CDFG 2011), including one occurrence within one mile. These are the same occurrences that are close to Alternative 1. This species was also documented on five different occasions in the upper desert portions of the Project area during fall 2010 and spring 2011 bird use count surveys conducted by POWER biologists. This species was detected in one location that is common to all alternatives, and four locations that are common to Alternatives 2, 2a, and 3, as well as the reconductoring. There is suitable desert scrub and Joshua tree habitat to support this species along much of the upper portions of this alternative. Because this component is a reconductoring and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and only minimal as required for construction access. Because this species is often wary of humans (CDFG 2008), it may be difficult to detect within the Project area. However, preconstruction surveys for special-status species would still occur in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife) in efforts to determine where their territories are for biological monitoring or avoidance. Project construction may result in habitat degradation as a result of the spread of non-native weed seeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. While this species is a year-round resident within the Project area, LADWP will avoid the nesting season to the extent possible to avoid having any direct impacts on nesting birds or their young.

General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

There is the potential for direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they have a possibility of occurring based on availability of suitable habitat in San Francisquito Canyon north of the northern terminus of the old San Francisquito Road as determined during 2008 surveys (POWER 2011). Grading of existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Tree trimming is likely to allow vehicles and equipment to pass without causing damage to trees by breaking branches; this would result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Furthermore, because nesting may occur outside of the officially recognized nesting season, if construction approaches any undetected nests with eggs or young, the disturbance may cause the adult(s) to abandon the nest. Impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo and southwestern willow flycatcher would constitute a take under ESA, as well as under CESA for the vireo only. Impacts to these listed species would require formal consultations with the federal and State resource agencies. Impacts to riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian-dependent species.

General practices that would reduce short- or long-term effects to these bird species and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) (Table 4.3.1-1).

Loggerhead Shrike

There would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys just south of the Barren Ridge Switching Station (POWER 2011). The sighting occurred just south of the Barren Ridge Switching Station and is thus in an area common not just to the BR-RIN reconductoring but to all Alternatives. Therefore, impacts to this species would be consistent within each action Alternative, and the same for each action Alternative below. General practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities),BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Mohave Ground Squirrel, Southern Grasshopper Mouse, Tehachapi Pocket Mouse, and San Diego Black-tailed Jackrabbit

There may be direct or indirect construction impacts to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit. Mohave ground squirrel is likely to occur due to availability of habitat, recorded occurrences, and POWER's 2008 desert habitat survey results in the Mojave Desert (POWER 2011, CDFG 2011). Southern grasshopper mouse has a possibility of occurring based on availability of suitable habitat in the Mojave Desert, while Tehachapi pocket mouse has a possibility of occurring based on availability of suitable habitat in the Mojave Desert and Antelope Valley and on historical occurrences in the Lake Hughes and Elizabeth Lake areas (CDFG 2011). San Diego black-tailed jackrabbit has a possibility of occurring based on availability of suitable habitat, a recent recorded occurrence approximately one mile west of San Francisquito Canyon, and a possible sighting by POWER in 2010 south of Elizabeth Lake on the edge of the ANF (CDFG 2011). Grading of new or existing access roads would result in habitat loss, decreasing food availability for these species and increasing predation risk due to reduced vegetation cover. Preconstruction surveys would identify any possible burrows, but as ground squirrel burrows are often dug under large shrubs (Leitner et al. 1995, Reid 2006), they may be difficult to see, leaving a possibility that burrows would go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death and a reduction in suitable hiding places. Ground squirrels or grasshopper mice may be scared from their burrows by construction noise or vibration, but because both species may maintain multiple home and accessory burrows (Reid 2006), this is not expected to result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of either of these species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators.

There is a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed to be nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (Zeiner et al. 1990). Impacts to the Tehachapi pocket mouse are assumed to be somewhat similar to the impacts that may occur to both ground squirrel and grasshopper mouse. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk. General practices that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Mountain Plover

There may be direct or indirect effects to mountain plover, expected to be present on the BR-RIN reconductoring corridor due to a 2011 recorded sighting one mile from the proposed ROW in the Antelope Valley, as well as the general availability of relatively flat, short grass habitat and agricultural fields in and around the proposed ROW in the Antelope Valley. Because this component is a reconductoring and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and only minimal as required for construction access. Project construction may result in direct effects to foraging individuals, including injury, mortality, or stress, as well as habitat degradation, particularly through the spread of non-native weed species in grassy areas. Preconstruction surveys for special-status species would help determine if mountain plovers are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and under BIO-2 (Prevent the spread of invasive weeds) LADWP would be required to prepare and implement a noxious weed control plan. Because this species is a winter resident and is not present in the area during the nesting season, Project construction would not impact its breeding cycle. However, because Project construction would be delayed to avoid the nesting season, this means that this species could still be present during construction. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals.

General practices that would reduce short-term or long-term effects to mountain plover include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to mountain plover include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

There may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All species are likely to occur within the Project area due to numerous areas of suitable habitat including agricultural fields in the Antelope Valley for foraging; homes and buildings for roosting at locations throughout the transmission line; rocky outcrops in the Mojave Desert and along the western side of San Francisquito Canyon; and riparian areas in the ANF and the western San Gabriel Mountains. Disturbance on the reconductoring corridor would be minimal and would mainly be concentrated in locations, such as pulling and tensioning sites. Vehicles would drive through to check successful reconductoring at each tower, but access roads are already in place and well-maintained, and additional work is unlikely. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance and construction during summer months, when bat activity is higher. Construction activities during this time period may cause a greater degree of disturbance to the bats, potentially leading them to abandon the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction, such as establishment of pulling and tensioning sites, during these seasonal windows may be more disturbing to some bat species than others, if they are present. Because bats are mainly nocturnal, any night activities may disturb them, disrupting foraging and potentially leading to injuries.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

Under mitigation measure BIO-21 (Protect sensitive bat species), if any bat roosts or hibernacula are identified within the Project area, LADWP may construct a replacement roost site with the assistance of a qualified biologist. According to the mitigation measure, the replacement sites would be located close to the originals and would be left open to allow bats to find and colonize them on their own; the existing roost sites in the construction area would only be closed after the bats had left. This may result in some stress to the bats or the system, but because the bats would be colonizing the replacement sites on their own and the sites would be located close to the originals, it is less likely that this would result in any severe effects or any risks to exceeding carrying capacity. Alternative roost sites would be chosen and constructed with concurrence and guidance from USFS and/or BLM, if applicable.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

Southwestern Pond Turtle

Under the BR-RIN reconductoring, there may be direct or indirect effects to southwestern pond turtle, expected to be present based on numerous identifications by USGS in 2002 (USGS 2003), 2003 (USGS 2004), 2007 (USGS 2007), 2009 (USGS 2010), and 2010 (USGS 2011), an identification by PCR Services (PCR Services 2001), and suitable habitat in the existing corridor, particularly in areas of deep perennial water such as in the St. Francis Dam Reach of San Francisquito Creek or in Drinkwater Flat. Areas where this turtle has been identified by biologists, which are the Drinkwater and St. Francis Dam reaches of San Francisquito Creek, are not expected to be affected by construction activity, as construction would be in Dry Canyon and would not use San Francisquito Canyon as access through this portion of the corridor. Habitat loss should be minimal, according to where sections of habitat are relative to the proposed ROW location. Habitat is present in a perennial oak riparian woodland area of Dry Canyon beginning roughly at the intersection of Forest Roads 5N27 and 6N21; this area is not known to be inhabited by turtles and no turtles or signs of turtles were observed during any 2008 and 2009 amphibian surveys. It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat. While most southwestern pond turtles typically do not move more than 500 meters upland, they have also been known to move up to 5 km if sufficiently stressed for appropriate habitat conditions (Bettelheim 2005). The reconductoring corridor is approximately one mile southeast of the previously documented occupied habitat, but it is probably unlikely that turtles would be able to traverse this distance due to the steep ridge in between San Francisquito Canyon and Dry Canyon, where the proposed ROW is. North of Bee Canyon, the existing transmission line runs along the ridges on the sides of San Francisquito Canyon. Should any turtles be present, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any southwestern pond turtles are detected within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where sufficiently vegetated aquatic habitat, muddy stream bottoms, or basking locations may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, particularly in regards to food and to hiding areas, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, turtles would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated turtles would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short-term and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-34, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Tricolored Blackbird

There may be direct or indirect effects to tricolored blackbird, expected to be present on the BR-RIN reconductoring corridor based on comments provided by the LVTC and nesting habitat in areas such as Elizabeth Lake, Lake Hughes, smaller ponds throughout the Leona Valley, and San Francisquito Canyon in the vegetated streambed north of the St. Francis Dam site, and foraging habitat in agricultural areas in the Leona Valley and Antelope Valley. Foraging behavior may be directly affected by construction through or close to any prominent foraging grounds. Preconstruction surveys for special-status species would help determine if tricolored blackbird is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Because the operation would consist of a reconductoring and not of new construction, habitat loss in general is expected to be minimal and only as needed for construction access. However, individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Breeding and nesting areas could be affected if tricolored blackbirds are present in areas such as Elizabeth Lake, which is less than a mile from the alternative. The primary disturbance in this case would be noise and visual obstructions, which at this distance may be relatively low. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Unarmored Threespine Stickleback
Under Segment K of the reconductoring corridor, there may be direct or indirect construction impacts to unarmored threespine stickleback, likely to occur along Segment K due to numerous sightings of this species within the Santa Clara River (CDFG 2010). While this species has not been recorded elsewhere along the corridor length, any vehicular crossings through streambeds by vehicles checking reconductoring success at each tower would possibly affect stickleback habitat. If the areas are wet at the time of reconductoring, this could result in sediment deposition and hydrological changes from vehicle tires; if streambeds are dry, then it would likely result in slight changes to the streambed substrate, but notably less than when wet. To analyze this sediment deposition, a watershed analysis was conducted for BRRTP (BRRTP Water Resources Technical Report 2011). The purpose of this analysis was to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each BRRTP Alternative route within the ANF. It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimate of erosion that would occur as a result of construction and operation of the BRRTP. Much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. In addition, due to the scale of this analysis, the predicted post-Project erosion values do not reflect implementation of General Practices or mitigation measures and represent a worst-case scenario.

As part of this analysis, a Revised Universal Soil Loss Equation, Version 2 (RUSLE) was selected to predict annual erosion from Project-related ground disturbance. The RUSLE model predicts long-term average soil loss expressed in tons per acre per year. For analysis of erosion resulting from the Project, road construction or improvement of existing roads at least five miles from the ROW were included in this analysis. Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the Alternative routes (e.g., vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated. The BR-RIN transmission line reconductoring would affect the Sand Canyon-Santa Clara River subwatershed, which has a combined area of 38,533 acres. Estimated average baseline annual erosion for this subwatershed is 47.69 tons/acre/year. With construction of the reconductoring along the corridor between Haskell Canyon Switching Station and Rinaldi Substation, predicted average annual erosion would be 47.75 tons/acre/year, an increase of 0.11 percent increase over baseline. The ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. However, with the implementation of mitigation measures HYD-01 (minimize the potential for erosion, siltation and flooding) and HYD-02 (reduce impacts to existing drainage patterns of streams and washes)

(Table 4.3.3-1), the potential impacts (less than 1% over baseline) resulting from substantial drainage pattern alteration would be considered less than significant for CEQA.

Additional effects from BRRTP reconductoring would be minimized by the implementation of general practices and mitigation measures. General practices that would reduce short- or long-term effects to unarmored threespine stickleback or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program) (Table 4.3.1-1).

Western Spadefoot Toad

There may be direct or indirect effects to western spadefoot toad, likely to occur on the reconductoring corridor due to numerous calls identified as potential western spadefoot toads during several 2009 surveys in San Francisquito Creek (POWER 2010a). These were never confirmed with visual identifications. The species is also expected to be present on Segment K of the reconductoring corridor due to recorded sightings of tadpoles and egg masses within one mile of this corridor in temporary ponds of the Santa Clara River, with additional recorded sightings of adults, tadpoles, and egg masses within two miles of the corridor (CDFG 2010). Pulling and tensioning sites would likely have to be established on each end of the reconductoring corridor between Haskell Canyon Switching Station and Rinaldi Substation, which would result in possible habitat loss depending on specific site locations and existing disturbance. Road grading should not be necessary, as access roads are already well maintained along this corridor. Grading of existing access roads would destroy or degrade grassland habitat throughout the reconductoring area, particularly along City Highline Motorway north of Drinkwater Flat, while excessive disturbance in streambed crossings may degrade habitat or possibly alter hydrology. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area, especially if they or their tadpoles are present in intermittent streams or temporary pools that are crossed by construction vehicles. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that do not contain the characteristics necessary for population sustainability, such as areas that have the substrate to support temporary pools. It may also place increased strain on any individuals that may be present in the relocation area through increased competition for resources, including breeding habitat. If suitable habitat within the area is limited, the carrying capacity may be exceeded and may put additional strain on population growth. To help avoid this to the extent possible, individuals would be relocated with concurrence and guidance from BLM and/or CDFG, if applicable. It is expected that any relocated spadefoots would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- and long-term effects to western spadefoot toad include GP-3, GP-4, GP-11, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

There may be direct or indirect effects to white-tailed kite, expected to have a possibility of occurring on the BR-RIN reconductoring corridor based on the availability of suitable habitat in areas going through the Antelope Valley, in the Leona Valley, in Drinkwater Flat, and in San Francisquito Creek. Dense-topped trees including oaks and conifers are lined along much of the northern section of San Francisquito Canyon Road, while Drinkwater Flat has an abundance of oak trees and San Francisquito Creek has a large area of dense riparian woodland north of LADWP's Power Plant 2. Trees in these areas could provide nesting or perching opportunities for kites. Because this component is a reconductoring and is not expected to require any new construction, disturbance and habitat loss are expected to be relatively low and only minimal as required for construction access. Terrestrial foraging habitat such as grasslands, meadows, and farmlands may be degraded as a result of construction, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6

(Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

New Haskell Canyon Switching Station

The Haskell Canyon Switching Station is proposed for all four action Alternatives. The Haskell Canyon Switching Station site as proposed would impact 13.67 acres of Riversidian Sage Scrub. The Haskell Canyon Switching Station footprint would include a paved internal access road 16 feet wide and a 100-foot by 100-foot gravel parking area, and would be enclosed by chain-link fencing with barbed-wire extension for security. Short-term impacts, such as crushing of vegetation by vehicles and equipment, are expected to occur during construction and development phases, and can have temporary or lasting effects on vegetation depending on the duration and frequency of ground disturbance. Similarly, vegetation clearing that would result during construction and outside the switching station footprint and access roads could be considered short-term, since these areas would be reclaimed and revegetated following the initial construction activities.

TABLE 4.3.1-7. PERMANENT IMPACTS TO VEGETATION COMMUNITIES—HASKELL CANYON SWITCHING STATION

New Haskell Canyon Switching Station	Permanent Acres (Ac) of Footprint
Vegetation	
Riversidian sage scrub	13.7

Impacts to Native Vegetation

The Haskell Canyon Switching Station proposed footprint contains Riversidian sage scrub vegetation. While LADWP intends to avoid native plant communities to the maximum extent possible and would flag resources for avoidance, construction of the Haskell Canyon Switching Station would still result in disturbance to a variety of native plant communities. See Impacts to Native Vegetation under the new 230 kV circuit above for discussion of permanent versus temporary impacts and expected direct and indirect effects to native vegetation for the Haskell Canyon Switching Station.

The Haskell Canyon Switching Station footprint would permanently disturb approximately 14 acres of Riversidian Sage Scrub. Additional acreages of land disturbance may occur, but the vegetation communities impacted are unknown at this time as final engineering has not been conducted.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

LADWP has indicated that GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion GPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on vegetation communities: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance measures) , BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Special-Status Plant Impacts

Surveys conducted by a POWER botanist in the spring of 2009 detected short-tail beavertail cactus approximately 0.25 mile south from the switching station site. In addition, the same list of special-status species for Alternative 2 have the potential to occur in the Haskell Canyon Switching Station area and are listed below.

There are 58 special-status plant species that have the potential to occur within Haskell Canyon Switching Station footprint:

- Alkali mariposa lily (*Calochortus striatus*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- Chaparral ragwort (*Senecio aphanactis*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Desert cymopterus (*Cymopterus deserticola*)
- Golden violet (*Viola aurea*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave tarplant (*Deinandra mohavensis*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California satintail (*Imperata brevifolia*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Creamy blazing star (*Mentzelia tridentata*)
- Delicate bluecup (*Githopsis tenella*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Nevin's barberry (*Berberis nevinii*)

- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Pale-yellow layia (*Layia heterotricha*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Peirson's lupine (*Lupinus peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock tarplant (*Deinandra arida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Round-leaved filaree (*California macrophylla*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Gabriel bedstraw (*Galium grande*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- White pygmy-poppy (*Canbya candida*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Direct effects include vegetation loss and partial or complete destruction of special-status plant species. Preconstruction surveys should locate any special-status plants on-site so that they can be avoided or relocated if necessary, but if a plant goes unseen or if construction occurs during a time when plants are not flowering and are not distinguishable, destruction of the plant by grading or excavation is a possibility. Trampling by ground crews would likely not kill any plants, but may partially destroy their above-ground biomass. Indirect effects include spread of non-native plant species, soil compaction, and increased dust deposition. There is potential for construction activities to introduce noxious or invasive plant species to the existing desert habitats. Vehicles moved from one construction site to the next sometimes introduce non-native or invasive plants by transporting seeds that may be clinging to vehicle structures or that have been incorporated into soil adhering to the vehicle. In addition, the potential for establishment of invasive plants can be increased when construction vehicles alter the structure of existing soils through compaction or excavation, which alter the ability of native plants to compete with introduced plant species. The risk of introducing invasive plants can be reduced by thoroughly cleaning construction vehicles (or maintenance) before moving to a new site and minimizing the area affected by vehicular traffic. Soil compaction from construction or excessive vehicular passage can result in plants being unable to receive sufficient water and nutrients through the soil to their roots. This could result in a loss of vigor and vitality to any plant that is present within soil that has been compacted. Additionally, soil compaction can result in increased runoff due to decreased water absorption in the soil. During construction, dust deposition from passing vehicles or from construction in dry dirt has the potential to result in decreased plant vigor due to reduced photosynthetic capabilities from a dust layer. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

For a discussion of invasive plant and herbicide use impacts on native vegetation, common wildlife, and special-status plants and wildlife within the Haskell Canyon Switching Station area, see above language for the BR-RIN Reconductoring, as impact types are expected to be very similar.

To further Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds) (Table 4.3.1-1). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

Wildlife Impacts

Coast Horned Lizard

There is a potential for the coast horned lizard to be directly impacted from the construction and operation of the Haskell Canyon Switching Station, where it is likely to occur based on the numerous areas of sandy friable substrate in nearby Haskell Canyon and Pettinger Canyon. Construction and grading of new access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Additionally, any coast horned lizards undetected by preconstruction surveys—in compliance with mitigation measure BIO-22—and present under vegetation, on roads, or in burrows may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations left open during the day or overnight would pose a risk to coast horned lizards that fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep coast horned lizards from approaching the active site during the day. The construction work may also lead to dispersal of individuals from the area, potentially leading to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where friable ground (for burrowing) may be limited or where harvester ants or other insects (for food) may be scarce, and may place increased strain on any individuals that may be present in the relocation area through increased competition for these resources. If suitable habitat within the area is limited, the carrying capacity may be exceeded and available resources, such as ants for food, may be at higher risk for local depletion. To help avoid this to the extent possible, these lizards would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated lizards would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Pallid Bat and Townsend's Big-eared Bat

There may be direct or indirect construction impacts to pallid bat and Townsend's big-eared bat. These species have possibilities of occurring based on the habitat surrounding the switching station such as the oak-lined canyon and rocky areas nearby. Pallid bats in particular are sensitive to human disturbance, and construction during summer months when activity is higher may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan 1976). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July (Reid 2006). Construction during these time periods may be more disturbing to some bat species than others, if they are present. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

Under mitigation measure BIO-21 (Protect sensitive bat species), if any bat roosts or hibernacula are identified within the Project area, LADWP may construct a replacement roost site with the assistance of a qualified biologist. According to the mitigation measure, the replacement sites would be located close to the originals and would be left open to allow bats to find and colonize them on their own; the existing roost sites in the construction area would only be closed after the bats had left. This may result in some stress to the bats or the system, but because the bats would be colonizing the replacement sites on their own and the sites would be located close to the originals, it is less likely that this would result in any severe effects or any risks to exceeding carrying capacity. Alternative roost sites would be chosen and constructed with concurrence and guidance from USFS and/or BLM, if applicable.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

White-tailed Kite
There may be direct or indirect effects to white-tailed kite as a result of the construction of the Haskell switching station. This species is expected to have a possibility of occurring in this area based on the rolling foothills in the area combined with scattered dense-topped oak trees, and several nearby intermittent streambeds (Haskell Canyon, Pettinger Canyon, Dry Canyon). Construction of this component would result in permanent loss of habitat in the construction area, although habitat on the specific switching station site is mostly marginal due to disturbance and existing transmission towers. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Trees in the surrounding area could provide nesting or perching opportunities for kites, but based on their locations are not expected to be removed or trimmed unless they fall

within the footprint of the switching station. Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Migratory Birds
Direct impacts from ground disturbance or alteration have the potential to affect several migratory and non-migratory species that frequent the Riversidian vegetation type within the switching station footprint. GP-11 would reduce short- and long-term effects to migratory bird species in the BRRTP area and GP-8 would protect local and migratory bird species that may occur, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).There may be direct or indirect construction impacts to burrowing owls; however, they are unlikely to occur based on previous surveys conducted in the area in 2009. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16 (Protect burrowing owl), would identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present.

General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker

Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

Expansion of Barren Ridge Switching Station

LADWP proposes to expand the existing Barren Ridge Switching Station to the east side by 235 feet (2.7 acres) for a total station size of 485 feet by 500 feet (5.7 acres). This expansion is part of all four action Alternatives. The expansion area of the station would include electrical structures and equipment for the addition of transmission lines, a material staging area, roadway within the station, and drainage area.

TABLE 4.3.1-8. PERMANENT IMPACTS TO VEGETATION COMMUNITIES—BARREN RIDGE SWITCHING STATION EXPANSION

Barren Ridge Switching Station	Permanent Acres (Ac) of Footprint
Vegetation	
Mojave creosote bush scrub	2.7

Impacts to Native Vegetation

The habitat assessment survey mapped Mojave Creosote Bush Scrub as being present within the footprint, which would be permanently impacted by the construction of the proposed expansion of the switching station (POWER 2011). Permanent vegetation loss would occur as a result of the construction of the switching station (2.7 acres) and new access roads (16 feet wide). Short-term impacts, such as crushing of vegetation by vehicles and equipment, are expected to occur during construction and development phases, and usually have minimal lasting effects on vegetation. Similarly, vegetation clearing that would occur during construction and outside the switching station footprint and access roads could be considered short-term, since these areas would be reclaimed and revegetated following the initial construction activities. LADWP has indicated that GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on vegetation communities: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Special Status Plant Impacts

Habitat assessment conducted in 2008 and 2009 found the following 10 special-status plant species that have the potential to occur within the Barren Ridge Switching Station footprint:

- Alkali mariposa lily (*Calochortus striatus*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Mojave tarplant (*Deinandra mohavensis*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Red Rock tarplant (*Deinandra arida*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Creamy blazing star (*Mentzelia tridentata*)
- Pale-yellow layia *(Layia heterotricha*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- White pygmy-poppy (*Canbya candida*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with site expansion or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. As previously described for native vegetation impacts, soil disturbance may also result in the spread of invasive plant species. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources, including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Wildlife Impacts

The primary impact to wildlife under the expansion of the Barren Ridge Switching Station would be the permanent loss of habitat and disturbance from the construction activities. The displacement of species during the construction phase as a primary result of human presence during construction, traffic and noise would be temporary. Since this is an expansion of the switching station, disturbance caused by operation and maintenance would be minimal, as operation and maintenance are currently underway. Wildlife movement would not be directly impaired from the additional footprint area or experience the magnitude of mortality risk that would be associated with entirely new ground disturbance. However, the expansion would likely cause some behavioral responses in some species (such as avoidance or alteration of migration route) that may cause added stress during an ecologically stressful period (migration).

Desert Tortoise

The potential impacts to desert tortoise include habitat loss, disturbance and mortality during construction through crushing. The permanent loss of desert tortoise habitat would occur at the switching station and access roads. Surveys conducted in 2008 located potential desert tortoise habitat within the Barren Ridge Switching Station footprint (POWER 2011). Impacts to habitat occupied by the federally listed endangered desert tortoise would constitute a take under ESA. Any tortoises that are present within the construction area would be relocated and would be permanently excluded from this area. Because the average desert tortoise home range can be anywhere from 10 to 100 acres (Meyer 2008), the 2.7-acre expansion of the existing Barren Ridge Switching Station would remove approximately 2.7 – 27% of the average home range. Even though current densities have declined dramatically within the Western Mojave Recovery Unit, the 2.7-acre expansion is adjacent to the existing facility and species that potentially utilize the expansion area as part of their home range are losing approximately 27% of the average home range. Because this operation would be an expansion of the existing facility and not a separate facility in a different patch of habitat, it would increase the size of the continuous disturbance without forcing any local desert tortoises to travel through fragments of habitat between facilities. Expansion of the switching station may indirectly lead to tortoise mortality if any tortoises are present within the footprint by increasing their likelihood of predation by ravens. This could occur if a tortoise is moved outside of the construction area and does not have a burrow yet, or by the increased human presence increasing the number of ravens on-site. Presence of an authorized biological monitor and implementation of tortoise mitigation as described in mitigation measure BIO-23 (Protect desert tortoise and habitat loss) would reduce the risk of some of these impacts, although habitat loss is unavoidable. The mitigation measure would require the authorized biologist to move any tortoises that are within the construction site to an area outside of it. Tortoises would be moved to vacant burrows or to newly-constructed artificial burrows no farther than 1,000 feet from the point of origin. This could result in stress to the relocated tortoises and may increase the risk of predation if they do not use the replacement burrows. Relocations are unlikely to have a significant effect on carrying capacity or the surrounding habitat because, since the tortoises would not be moved more than 1,000 feet from their point of origin and because the average desert tortoise home range is between 10 and 100 acres (Meyer 2008), the relocation burrow is likely to be in an area that would be used by them anyway. Relocations, burrow construction, and relocation success would be coordinated with USFWS as necessary. Construction would result in degradation of desert tortoise habitat due to soil and vegetation disturbance, introduction of non-native plant species, habitat fragmentation, and increased noise, traffic, equipment movement, and human presence. Disease resulting from human-caused stress is also taking a heavy toll on the desert tortoise (Berry 2008). Impacts to this species would be considered significant due to their protection under ESA and would require formal consultation with USFWS.

The following recommended mitigation measures are expected to avoid and minimize adverse impacts to this species, and are discussed in detail in the mitigation section. General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

Le Conte's Thrasher
There may be direct or indirect effects to Le Conte's thrasher, expected to be likely to occur around the Barren Ridge Switching Station based on availability of suitable habitat surrounding the switching station and the recorded occurrences to the south (CDFG 2011), as well as a detection in the switching station's vicinity during spring 2011 bird use count surveys conducted by POWER biologists. Expansion of this switching station will result in permanent habitat loss on the site. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Because the expansion area is a relatively small, focused area, the preconstruction surveys that are required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife) would be more likely to determine if any thrashers were nesting or foraging on-site. Project construction may also result in habitat degradation to the surrounding area, particularly as a result of the spread of non-native weed seeds as vehicles move in and out of the construction area. LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Individuals in the surrounding area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. While this species is a year-round resident within the Project area, LADWP will avoid the nesting season to the extent possible to avoid having any direct impacts on nesting birds or their young.

General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

New 230 kV Double-Circuit Transmission Line
As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

The new 230 kV double circuit transmission line for Alternative 1 would cross 83 miles and require seven miles of new access road. Implementation of the Project would require construction to occur within a broad array of habitat types. Within the ANF along the Alternative 1 transmission line, the majority of the area consists of dense, impenetrable chaparral, with very steep slopes. Where the terrain is steep and access is limited, the USFS would require that the new double-circuit 230 kV structures be constructed by the use of helicopter. Refer to Chapter 2, Figure 2-22, the Helicopter Mitigation Map, which illustrates locations currently identified for helicopter construction. The use of helicopters for the construction of transmission tower structures would eliminate the need for new access roads to structure locations, and would therefore minimize land disturbance associated with crane pads, structure laydown areas, and the trucks and tractors used for delivery of structures to sites. The Alternative 1 transmission line is the longest (83 miles) transmission line among the Alternatives, and therefore has a higher estimated surface disturbance and estimated amount of acreage proposed for disturbance. Vegetation loss is estimated at 576 to 599 acres of temporary disturbance and 120 to 199 acres of permanent disturbance. Limited surveys were conducted along the Alternative 1 transmission line corridor due to private land (60 acres) in the north and due to the safety hazard within the ANF (15 miles) that included dense, impenetrable chaparral, with very steep slopes.

Permanent impacts from the Alternative 1 transmission line would primarily occur from habitat change, habitat fragmentation, and disturbance (POWER 2011). Habitats would be converted to earlier successional conditions due to vegetation clearing. Change would also occur from the introduction of anthropogenic structures in native habitat. Disturbance associated with human presence from access roads and maintenance activities would occur for the life of the Project. Habitat fragmentation would occur from building access roads in native habitat and interrupting flyways for avian species.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.1-9). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impacts to the ROW within any locations that these resources are known to occur Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect or direct impacts that may occur from construction vehicles or equipment accessing the Project site. Species considered to be absent or unlikely to occur were not included in the analysis below. However, these species are analyzed in detail in the Biological Technical Report.

Table 4.3.1-9. Potential Biological Impacts Associated with the Alternative 1 230 kV Double-Circuit Transmission Line within the 500-foot Impact Corridor

Alternative 1 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American badger	16.9	16.9	4.4	8.3
California condor	3.1	3.2	0.6	1.0
Desert tortoise	24.1	24.1	3.0	3.0
NFS GIS Modeled Wildlife Habitat				
Arroyo toad	19.6	20.4	4.4	7.8
California red-legged frog	17.7	18.5	4.0	7.3
Least Bell's vireo	13.7	13.7	3.1	5.5
Southwest willow flycatcher	27.2	28.2	6.2	11.0
Non-modeled Wildlife Habitat				
American badger	0.7	0.7	0.1	0.1
California gnatcatcher	4.6	4.6	1.2	2.2
Desert tortoise	7.8	7.8	1.0	1.0
Kit fox	5.2	5.2	0.7	0.9
Wildlife Range				
Desert tortoise	314.6	314.6	68.6	116.7
Mohave ground squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	42.4	47.8	8.5	14.2
Wildlife Corridor				
Yes	133.4	151.8	27.6	44.4
Known Special-Status Plant Species on ANF lands				
Short-joint beavertail	14.7	17.2	2.6	3.7
Slender mariposa lily	0.5	0.6	0.1	0.2
Joshua Trees Present				
Yes	54.6	54.6	12.1	20.9
Vegetation				
Agricultural land	3.5	3.5	1.0	1.9
California annual grassland	69.3	69.3	14.0	22.7
Chamise chaparral	77.2	85.6	15.2	24.3
Barren/developed	3.4	3.4	0.4	0.5
Joshua tree woodland	35.9	35.9	8.6	15.2
Mojave creosote bush scrub	223.0	223.0	47.0	78.4
Mojave wash scrub	8.3	8.3	1.0	1.0
Rabbitbrush scrub	15.9	15.9	4.1	7.7
Riversidian sage scrub	63.5	70.2	12.7	19.4
Scrub oak chaparral	0.1	0.1	0.0	0.0
Southern mixed chaparral	70.3	78.8	15.3	25.8
Mapped Weed Species on ANF lands				
Blessed thistle	1.0	1.2	0.2	0.3
Indian hedgemustard	0.7	0.7	0.1	0.1
Prickly Russian thistle	1.0	1.2	0.2	0.3

Alternative 1 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Saltcedar	0.6	0.6	0.1	0.2
Tocalote	5.2	5.2	1.3	2.3
Tree tobacco	0.7	0.7	0.2	0.3
Yellow sweet clover	2.0	2.0	0.5	1.0
Riparian Communities				
Southern coast live oak riparian forest	0.7	0.7	0.1	0.1
Southern cottonwood willow riparian forest	0.9	0.9	0.2	0.4
Southern sycamore alder riparian woodland	0.7	0.7	0.2	0.3
Southern willow scrub	1.1	1.3	0.2	0.3
Valley oak woodland	2.7	2.7	0.6	1.0
Biological Protected Area				
Castaic Lake SRA	12.4	12.4	2.2	3.4
San Andreas Rift Zone SEA	53.2	54.3	10.0	15.2
Santa Clara River SEA	2.0	2.0	0.2	0.2

Impacts to Native Vegetation

Project impacts are considered permanent if they involve the conversion of land to a new use, such as with the construction of new roads or the footings of towers or new permanent helicopter landing areas, although in some instances helicopter landing sites may be subject to reseeding or restoration. Temporary Project impacts are those effects that do not result in a permanent land use conversion. Temporary effects to vegetation communities or other ground disturbance activities restricted solely to the construction phase, such as grading roads and clearing vegetation within staging and pulling areas, are considered temporary provided that native vegetation is not replaced with infrastructure or the area is not maintained free of vegetation, and that restoration is deemed feasible before Project implementation.

Direct impacts to native vegetation communities would occur as a result of the removal of vegetation during construction activities. These ground-disturbing construction activities would include clearing and grading for tower pad preparation, tower removal sites, pulling and tensioning sites, and helicopter staging areas, and construction, grading, and widening of new spur roads and existing access roads.

In total, the Alternative 1 transmission line would permanently disturb a maximum of approximately 2.1 acres of vegetation identified as rare and worthy of consideration by the CDFG (197.3 acres of non-rare vegetation) and would temporarily impact a maximum of approximately 6.3 acres of rare vegetation (594.7 acres of non-rare vegetation). Types of California vegetation that are considered to be rare and worthy of consideration can be found in CDFG's "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Additional acreages of land disturbance would occur, but the vegetation communities impacted are unknown at this time as final engineering has not been conducted.

Indirect impacts to native vegetation communities could include alterations in existing topography and hydrology regimes, the accumulation of fugitive dust, disruptions to native seed banks from ground disturbance, and the colonization of non-native, invasive plant species.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

LADWP has indicated that GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

Special-Status Plant Impacts

At least 54 special-status (federally and State listed Threatened, Endangered, Candidate, and Proposed [TECP], USFS Sensitive/Watch, CNPS listed) plant species have the potential to occur in areas of suitable habitat within the Alternative 1 transmission line corridor. Detailed descriptions, habitat preferences, and the known distribution of these species are presented in the Biological Resources Technical Report. Many of these plant species are ephemeral in nature and include many spring-flowering annuals and herbaceous perennial species that are generally only visible during optimally timed field surveys in years of average rainfall or greater. Field surveys were conducted in 2008, 2009, and 2010 within portions of the proposed Project area.

There are two special-status plant species known to occur within the Alternative 1 impact corridor (Table 4.3.1-9):

- Short-joint beavertail
- Slender mariposa lily

In addition, there are 52 special-status plant species that have the potential to occur within Alternative 1:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)

- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)

- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Because many sections of the access roads along the Alternative 1 transmission line, particularly the Old Ridge Route, are not wide enough to accommodate construction equipment, widening the drivable width of the roads may remove suitable habitat for one or more of these species and/or remove individuals that go undetected during preconstruction botany surveys. Clearing and grading associated with the placement of towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Construction on steep hillsides may also result in off-site sediment transport that may bury rare plants in adjacent habitat or alter soil conditions. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. Soil disturbance may also result in the spread of invasive plant species. Trampling due to foot or vehicular traffic could result in soil compaction if it occurs repeatedly within any specific area; soil compaction may in turn lead to reduced water absorption and increased runoff, potentially contributing to an increase in non-native plant species, which could be more tolerant of these conditions. The Old Ridge Route is paved and soil compaction would be mostly limited to spur roads, tower sites, or areas where the paved access road may not be wide enough even with vegetation removal from within the road. Edison Spring Road, however, is a dirt road that would undergo soil compaction along its length and would be at greater risk of runoff or sedimentation. Operational impacts would also include trampling or crushing due to public use of new or improved spur roads and access roads, increased erosion, and the spread and colonization of noxious weeds. Other operational impacts include removal and trimming of vegetation during maintenance activities.

Restoration activities may inadvertently lead to negative effects on special-status plant species. For instance, seed collection from common native plants may result in the unintentional trampling of special-status species, should they be present in the area, or in the inadvertent removal or destruction of their seeds. Weed removal activities may lead to species being treated or removed that are not non-native. However, it is unlikely that special-status species would be present in areas of heavy non-native plant cover and may instead be present in areas of predominantly native or mixed native/non-native plant composition. In addition, weeding and seed collection efforts may lead to the unintentional transportation of non-native seed on clothing or weeding materials to areas occupied by special-status plants, potentially creating a new weed infestation. In order to minimize the negative impacts of these restoration activities, the provisions of General Practices and mitigation measures such as effective preconstruction flagging of sensitive species, required training for field personnel to be familiar with identifying non-native species and/or species that are to be avoided, and washing seeds off of all equipment prior to entering new areas would assist in reducing the likelihood of incidental effects during seed collection or weed removal.

While not all the rare plants identified in the Project area would be subject to construction-related disturbance, it is likely that there would be a loss or mortality of some rare plants. Some of these species are more common in the region and include California black walnut, Plummer's mariposa lily, and short joint beaver tail cactus. These species are considered to be more common in the ANF and are therefore less susceptible to loss on a forest-wide level. Other species, including Ross's pitcher sage, San Fernando Valley spineflower, and San Gabriel bedstraw, are of a more limited distribution and may be more susceptible to regional loss. However, as described above, impacts to many of the plant species identified in the Project area could be avoided or reduced if mitigation measures are implemented.

Under mitigation measure BIO-13 (Protect special-status plant species and their habitat), special-status plant species in the Project area that cannot be avoided by construction may be transplanted. Transplantation may carry its own negative impacts to both moved and resident plants. The plants that are moved may have difficulty establishing if there is already competition for resources (e.g., water or sunlight in areas of dense vegetation), and may undergo a period of stress until their roots can re-establish into the soil. If a large number of plants are being transplanted to one area, the resident plants may also experience reduced resource availability, especially if they are already under stress from any non-native vegetation. The local system itself may be overwhelmed if there are too many new individuals and may exceed its carrying capacity and its ability to support all the plants, both the residents and those that were moved. This may result in poor health for the plants and could result in unexpected plant mortalities. To help avoid this to the extent possible, these plants would only be removed and transplanted with concurrence and guidance from USFWS, USFS, and/or BLM, as applicable. It is expected that any transplanted plants would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone. Alternatively they may also be transferred to the appropriate regulatory agency for handling or transplanted to a location specifically designated by the appropriate agency.

The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

The potential introduction or spread of noxious and invasive weeds would occur primarily during construction activities, but would also continue to occur during operation and maintenance phases of the Project. The introduction of noxious and invasive weeds would be related to ground disturbance from clearing and grading, expansion of access roads, construction of spur roads, and road maintenance; the use of vehicles, construction equipment, or earth materials contaminated with non-native plant seed; use of straw bales or wattles that contain seeds of non-native plant species; and enhanced public access to the Project corridor during and after construction. Additionally, weed seeds are often spread on equipment or clothing by construction or maintenance personnel. This would provide many avenues for new propagules (any part of a plant that may generate a new individual plant) to be carried into areas that previously were isolated from sources of noxious weed seeds.

For the purpose of this discussion, Project-related disturbance or impacts to all habitats, even disturbances such as grading for temporary road construction, were treated as permanent in large part due to the foreseeable establishment and spread of noxious weeds and the conversion of native habitats to ruderal habitats (or expansion of existing ruderal habitats) following disturbance. Noxious weeds often become established following disturbance. For example, in arid sites or in sites with poor nutrient availability, noxious weeds may become established following water and/or nutrient addition such as may occur along roadways as a result of increased runoff or nitrogen deposition.

Typically, in areas where few exotic species occur, the characteristics of the existing topsoil structure, cryptogamic crusts, or the existing native vegetation prevent weed seeds from germinating. Once soil disturbance has occurred, the soil structure or native biotic components are affected such that these factors no longer preclude the establishment of noxious or invasive weeds. Following establishment, new populations of weeds are often extremely difficult to eradicate. It may take several years or decades to re-establish the native soil structure and biota. As many noxious weeds occurring in Southern California are fast-growing plants adapted to high light conditions, removal of canopy vegetation, either in woodlands or in chaparral and scrub habitats, may release weed seeds present in the seed bank from dormancy and allow them to germinate and establish. The spread of invasive plant species could also increase from unauthorized vehicle use. In addition, some roads and potentially drivable terrain that were previously obstructed by vegetation may now be more visible, making them subject to unauthorized off-road vehicle use. Access to these areas threatens the recruitment of native vegetation and promotes the spread of non-native and invasive species. In some cases, the loss of native plant communities could be permanent. This is especially true of climax plant communities that take decades or more to develop, such as pinyon-juniper woodland and Mojave scrub. These areas are at risk of type conversion, especially if non-native and invasive weeds become established.

Direct impacts associated with the introduction of noxious weeds could occur when noxious weeds become established in an area. These invasive plant species can cause a permanent or long-lasting change to the environment by increasing vegetative cover, creating a dense layer that prevents native vegetation from germinating, altering the edaphic and hydrological conditions through nitrogen fixation (as in Spanish broom), or may drain the water table (as in giant reed). Noxious weeds can create such an unfavorable environment for wildlife that associate, mutualistic species necessary for native plant life cycles, such as seed dispersers, fossorial mammals, or pollinators, are lost from the area.

Indirect impacts attributed to the colonization of noxious weeds could include a gradual decrease in natural biodiversity, as noxious weed infestations may extirpate native plant populations. The lingering effects of herbicide use to remedy noxious weed infestations could adversely impact native plants and wildlife and are discussed in further detail below. Ongoing operational and maintenance impacts could include the facilitation of noxious weed establishment and spread as a result of increased vehicular and human traffic.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds) (Table 4.3.1-1). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2080.

As part of a comprehensive Weed Control Program (BIO-2 [Prevent the spread of invasive weeds]), several options may be utilized to limit or reduce impacts from invasive plants. To date, several methods exist and are regularly prescribed for the eradication of existing weed populations depending on their location and the habitat type they infest. Some of these include herbicide application, mechanical removal, biocontrol methods, prescribed burns or floods, and shading. The removal of established noxious weed populations is best accomplished by species-specific methodologies, which may include a combination of the above removal procedures or precise timing of specific actions. Due to typically large seed banks and the ability of some weed species to vigorously resprout following removal methods, most species require more than one round of treatment, or require a differing follow-up treatment method after the initial removal occurs.

Noxious weed control measures prescribed as mitigation for Project impacts should be species-specific, and herbicides should be applied only if necessary after considering alternate methods or as part of a proven eradication strategy for that weed species. While the overall benefits of herbicide use are generally straightforward, herbicide use may have detrimental effects on ecosystem values and functions. There are several exposure scenarios possible for herbicides and wildlife. These include direct spray; indirect contact through grooming or contact with affected vegetation; and ingestion of contaminated media, including vegetation, prey species, and water. However, with the measures prescribed as mitigation, the potential for impacts to aquatic fauna would be minimized. For non-target terrestrial plants, the primary hazard is unintended direct spray or spray drift. Off-site drift typically depends on the droplet size and meteorological conditions. Other off-site exposure scenarios for vegetation include percolation, runoff, sediment transport, and wind erosion.

Table 4.3.1-3 listed above under the new 230 kV circuit contains a list of herbicides, including their potential risks to native vegetation and wildlife, that are proposed for use within the Project area. It is important to note that there is an extensive variability related to different types of exposure scenarios and dosages for each herbicide. Furthermore, the effects of certain herbicides can vary exclusively at the species level. Therefore, the information presented in Table 4.3.1-3 is intended as a general overview of the possible effects of herbicide use. Full analyses on the effects of these eight listed herbicides on human and ecological health can be found in the Forest Service Risk Assessment Final Reports (USFS n.d.), which are incorporated here by reference.

The use of herbicides in the Project area would comply with regulations set forth by the EPA and California Department of Pesticide Regulation (CDPR). Additionally, any herbicide use on NFS lands would be subject to the review and approval of the appropriate USFS personnel. Although overspray may adversely affect some non-target species, the removal of noxious or invasive weeds and the control of existing populations would be considered a beneficial effect.

Wildlife Impacts

The South Coast Missing Linkages project developed a comprehensive plan for maintaining and restoring critical habitat linkages between existing reserves or protected lands (South Coast Wildlands 2008). The linkage along the Alternative 1 transmission line serves to connect the Los Padres National Forest and ANF. This linkage serves the needs of many special-status species including, but not limited to, California condors, pond turtles, California spotted owl, mule deer, and mountain lion. I-5 serves as a major transportation route and the greatest barrier to wildlife movement, and parallels the proposed Alternative 1 transmission line corridor through the ANF. Wildlife movement impacts from the new transmission line would be temporary during construction. However, I-5 represents a permanent and long-term barrier. Currently, there are five areas that provide opportunities for movement of animals via riparian and upland habitats and avoid directly crossing over I-5 (South Coast Wildlands 2008). The Alternative 1 transmission line would impede wildlife movement by increasing human presence during construction and creating an additional 7.3 miles of access roads, potentially close to riparian and upland habitats. In addition, displacement of wildlife species could occur, as species would typically seek to avoid areas where construction activities are initiated. The extent of such displacement would be partially dependent upon the type of construction activity as well as the duration and intensity. Individuals displaced from the areas cleared of native vegetation could be jeopardized if adjacent habitats are already at carrying capacity, if only less suitable habitat is available, if there is a reduction in food availability, or if the animals are exposed to an increased risk of predation. Development of and disturbance from additional access roads near riparian and upland habitats could be decreased with helicopter construction.

Actions conducted within an RCA must meet specific criteria defined by the USFS, which include both biological and watershed goals and functions. In addition, actions that would result in effects considered other than neutral or beneficial may not be conducted without a Project-specific amendment to the existing ANF Land Management Plan (USFS 2005). One hundred fifty-one RCAs were identified during field assessments for Alternative 1 on NFS lands. These RCAs fall within the proposed transmission line ROW or along access roads that would be used and upgraded during construction of the Project; 102 identified RCAs could be affected by construction of the Alternative 1 transmission line. Due to the topography and limited access along the Alternative 1 transmission line corridor, several RCAs would be crossed at numerous locations by access roads and spur roads. Based on the anticipated number of roads needed along the Alternative 1 transmission line, it would have the highest acreage impacts to RCAs when compared to the other action Alternatives. If helicopter mitigation is used along the Alternative 1 transmission line, the impacts to RCAs would be reduced due to a decreased need for road widening in areas that can be more easily accessed by helicopter.

There are three special-status wildlife species that have been known to occur within the Alternative 1 transmission line impact corridor (Table 4.3.1-9)

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)
- California condor (*Gymnogyps californianus*)

American Badger

Along the central portion of the Alternative 1 transmission line, there may be direct or indirect construction impacts to American badger, expected to be likely to occur based on reported occurrences near State Route 138 and the northwestern corner of the ANF (CDFG 2010). The American badger occurs along the northern portion of all action Alternatives. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, which may result in a temporary increase in food availability due to reduced cover for rodents and other species that badgers prey upon. The portion of this Alternative in the Antelope Valley would have no existing parallel transmission lines, though the Los Angeles Aqueduct would run parallel to the Alternative 1 transmission line for some of its length, both above- and below-ground depending on the specific location. The portion of this Alternative in the ANF would run parallel to up to five existing transmission lines at a time. This would result in varying degrees of habitat loss depending on where construction would occur. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox), would identify any possible active or inactive American badger burrows, but some burrows may still go unnoticed and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may in turn result in the injury or mortality of one or more badgers. Badgers may be displaced by construction activity, including noise and vibrations, but because their home ranges can be up to 400 acres for females and up to 600 acres for males, and because some of the nearby occurrences are more than two miles away, it is likely that any displaced individuals would be able to expand outside of the construction zone without a considerable impact on their well-being. General practices that would reduce short- or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to American badger include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

California Condor

The California condor is considered present within the Project. GIS data provided by USFWS indicates that the proposed Alternative 1 transmission line corridor has the most condor activity recorded for all action Alternatives, with abundant condor activity in the Tehachapi Mountains north of Alternative 1 and around Lake Piru southwest of Alternative 1 (USFWS 2008, USFWS 2009). The construction of the towers and presence of new transmission lines may stress condors or lead to a collision depending on eventual placement and proximity to the existing line or ridgeline; however, this is unlikely, as this transmission line would be placed along the other transmission lines in this corridor and would not likely be substantially taller than the existing towers. If condors are present in the vicinity of the Project, they may be at risk for collision. While the transmission lines and towers would be constructed according to APLIC guidelines

(2006) and would be parallel to existing lines, reducing the chance for electrocution, in certain isolated areas, such as where transmission lines span across canyons or are located along ridgelines, there would be greater risks for condor collisions. As condors continue to expand their current range into their historical distribution, this risk could increase in mountainous areas where condors are more likely to occur. It is estimated that the maximum permanent disturbance to California condor-occupied habitat would be 1.0 acre, while the maximum temporary disturbance would be 3.2 acres. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that would occur on this corridor would have a substantial effect on this species, as juveniles have been measured foraging over 140 miles and nesting pairs typically 31 to 44 miles in a single day (USFWS 1996), and can likely adapt to the relatively minor change. Construction for the Project could cause short-term temporary behavioral avoidance of the area due to increased activity or noise. Condors are known to become alarmed by loud noises from distances of over one mile, and may avoid coming close to or nesting near these areas or may alter their behavior to avoid the activity (USFWS 1996). However, Project construction should not involve overly excessive noises such as blasting, and LADWP would enforce noise reduction measures such as using noise reduction elements on construction equipment and minimizing vehicle idling time. Construction may result in trash or microtrash being left behind by the crews, although this would be minimized by implementation of mitigation measure BIO-18 (Protect California condor). Any leftover trash or microtrash has the possibility to be ingested by condors, which in turn would be regurgitated for chicks to feed on, which can lead to mortality of the chicks (USFS 2008c). This is a short-term impact that would be addressed by the implementation of BIO-18 and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6, road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. If condors are present in the construction area, then all construction would stop until the condor leaves the area; the biological monitor would document the occurrence and report it to USFWS (and USFS if applicable).

General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors.

Desert Tortoise

The desert tortoise occurs along the northern portion of the transmission line for all action Alternatives, where there are three recorded tortoise sightings in areas along or in proximity to the two northernmost miles of the Project (CNDDB 2011). Therefore, impacts to this species would be consistent within each action Alternative. Construction activities that resulted in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a take of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS. It is estimated that the maximum permanent disturbance to desert tortoise occupied habitat would be 3.0 acres, while the maximum temporary disturbance would be 21.6 acres. Project construction could result in direct adverse effects to desert tortoise. Injury or mortality could occur to tortoises underground in undetected burrows that are driven over by construction vehicles or equipment, or to tortoises that are under vegetation and are not detected during construction or pre-construction surveys. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. During construction, increased predation could occur from ravens and coyotes, which are attracted to human activity to scavenge for food. Tortoises that wander too close to construction would require manual relocation by an authorized biologist and would likely undergo stress during the movement process and possibly afterward, until they are able to find suitable shelter again. Mitigation measure BIO-23 (Protect desert tortoise and habitat loss) would require the qualified biologist to move any tortoises that are within the construction site to an area outside of it. Tortoises would be moved to vacant burrows or to newly-constructed artificial burrows no farther than 1,000 feet from the point of origin. This could result in stress to the relocated tortoises and may increase the risk of predation if they do not use the replacement burrows. Relocations are unlikely to have a significant effect on carrying capacity or the surrounding habitat because, since the tortoises would not be moved more than 1,000 feet from their point of origin and because the average desert tortoise home range is between 10 and 100 acres (Meyer 2008), the relocation burrow is likely to be in an area that would be used by them anyway. Relocations, burrow construction, and relocation success would be coordinated with USFWS as necessary. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area.

Habitat loss and reduced vegetation may subject desert tortoises to increased predation from aerial predators by decreasing the amount of cover available to hide under. Additionally, construction of a new transmission line would increase nesting and perching opportunities for raptors, increasing the likelihood of predation on desert tortoises. After construction is completed, injury or mortality from vehicle collisions may occur during maintenance activities and security patrols.

Of the five current recovery units (Northeast Mojave, Eastern Mojave, Colorado, Western Mojave, and Upper Virgin River), BRRTP would be located within the Western Mojave Recovery Unit. During surveys conducted within the recovery units, the Western Mojave Recovery Unit was determined to have the highest average density of the three Mojave recovery units, at 5.24 tortoises per square kilometer between 2001 and 2010 (USFWS 2006, USFWS 2009a, USFWS 2010a, USFWS 2010b). In 2010 the average density of desert tortoises in this recovery unit was 3.2 tortoises per square kilometer (USFWS 2010b). The BRRTP would not be located within any Desert Wildlife Management Areas or in the Desert Tortoise Natural Area. The Project would be located along the extreme southwestern edge of the recovery unit, passing through areas that are alternately considered of low potential to support desert tortoise—roughly the area below the Los Angeles/Kern County line—and those that are considered high potential to support it—roughly those above the county line (USFWS 2011).

The Project may have local effects on this species, which in this area is subjected to a fair amount of habitat fragmentation from State Route 14, the towns that surround it, and other facilities in this region such as Edwards Air Force Base. There are five desert tortoise records from the BRRTP area within the last ten years and three are of live specimens (CDFG 2011); one of these was an identification made by POWER Engineers, Inc. (BRRTP Biological Technical Report 2011). While it is likely that there are additional tortoises in the general area, the Project could result in a detrimental impact on this local population. Increased perching opportunities for predators may lead to higher injuries or mortalities, or even higher stress, which could in turn result in decreased fecundity during a breeding period if tortoises are too stressed to breed. This could in turn result in slowed population growth. If desert tortoises are physically moved from the Project site into areas where other tortoises might be, it could overload the carrying capacity of that particular area, increasing stress on the individuals and making living conditions more difficult by decreasing the amount of available forage and resources. Relocated tortoises may also have the potential to spread diseases to other tortoises. While these impacts may be detrimental to the immediate area surrounding the ROW, the impact on the entire recovery unit is likely to be relatively small, especially because the Project is only located in the southwestern corner of it.

General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), (HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

No other special-status species were found within the Alternative 1 transmission line 500-foot impact corridor. There are however species that are present, have the potential to occur, or have habitat within one mile of the impact corridor. These include:

- Bald eagle (*Haliaeetus leucocephalus*)
- Burrowing owl (*Athene cunicularia*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Golden eagle (*Aquila chrysaetos*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mountain plover (*Charadrius montanus*)
- Pallid bat (*Antrozous pallidus*)
- Peregrine falcon (*Peregrine falcon*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Swainson's hawk (*Buteo swainsoni*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)

- Townsend's big-eared Bat (*Corynorhinus townsendii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Western red Bat (*Lasiurus blossevillii*)
- White-tailed kite (*Elanus leucurus*)

Bald Eagle, Golden Eagle, Peregrine Falcon, and Swainson's Hawk
With the Alternative 1 transmission line, there may be direct or indirect effects to Swainson's hawk, peregrine falcon, bald eagle, and golden eagle. Swainson's hawk, peregrine falcon, and bald eagle are expected to have a possibility of occurring on this Alternative due to the abundant open water around Quail Lake, Pyramid Lake, Castaic Lake, and Castaic Lagoon and suitable open grassland and shrubby habitat in the northern areas of the proposed corridor. Bald eagles have also been observed by USFS personnel at Pyramid Lake (Sill personal communication 2011). The CNDDB (CDFG 2011) contains three records for Swainson's hawk pair sightings eight miles from the proposed Alternative 1 transmission line, west of Rosamond. There are also nesting opportunities for falcons on the buildings and structures throughout the lower portion of the corridor, such as the Castaic Power Plant, residences or other buildings in the hills between Castaic Lake and I-5, and existing transmission lines. Golden eagles are expected to be present due to numerous sightings within the project areas for the Alta-Oak Creek Mojave Project (Kern County 2009), PdV Wind Energy Project (Kern County 2007), and Pacific Wind Energy Project (Kern County 2010a). Construction of new towers, helicopter construction, and grading of new or existing access roads would result in vegetation and habitat loss to these species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the lack of recorded sightings, but should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which would be greater in the central (Neenach) and far southern (Castaic, San Francisquito Canyon) areas than in the northern portion or the forested portion of the proposed line. If this is the case, adults and/or their young would likely need to relocate, which could result in indirect injury or mortality as they move to inhabit new locations; however, implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Injury or mortality to golden eagles could occur because of their known proximity to the Project area and the availability of suitable foraging habitat within the Antelope Valley. Power line design could result in injury or mortality to raptors in general that are flying through the area or even perching on the towers, and appropriate tower design and protective measures would need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the addition of this transmission line would result in a substantial increase in risk to this species from colliding with transmission lines along this alignment.

There is a 36-mile portion of the Alternative 1 transmission line that would not have any existing parallel transmission lines, and the construction of a new transmission line in this area would increase the risk to avian species of collision or electrocution. However, most of the proposed transmission line would be directly adjacent to several other transmission lines, and it is unlikely that the addition of this transmission line would result in a substantial increase in collision or electrocution risk in these areas. General practices that would reduce short- or long-term effects to Swainson's hawk, peregrine falcon, bald eagle, and golden eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Swainson's hawk, peregrine falcon, bald eagle, and golden eagle include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle) (Table 4.3.1-1).

Burrowing Owl

With the Alternative 1 transmission line, there may be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on the presence of suitable habitat and known occurrences of this species and its burrows in the Antelope Valley. Because owl burrows and live owls have been detected throughout the vicinity of the Project area (LSA 2007b, CDFG 2011), including all four action Alternatives, impacts to this species would be consistent within each action Alternative. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, which would result in habitat fragmentation and degradation of the overall habitat quality, making it less appealing and less suitable for burrowing owls. Preconstruction surveys for animals and burrows, in compliance with mitigation measure BIO-16 (Protect burrowing owl), would identify any possible active or inactive burrowing owl burrows, but some burrows may still go unnoticed or be incorrectly identified as rodent-only burrows and may therefore be crushed or damaged by vehicles, heavy equipment, or trampling. This may result in the injury or mortality of one or more owls if they are present. Construction activity may draw the attention of scavengers, resulting in an increased risk of predation. Because burrowing owls are most active at dusk and dawn (Zarn 1974) and have a reduced capability to forage at night (Voous 1988), the presence of humans, vehicles, and heavy equipment may disrupt any foraging or nesting practices during construction hours. General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

Coast Horned Lizard

Under Alternative 1, there would be direct or indirect effects to coast horned lizard. Coast horned lizards have been identified in the vicinity of the ROW on the Alternative 1 transmission line independently by POWER (along the west fork of Liebre Gulch) and USFS biologists (Sill personal communication 2011) and are expected to be present. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss, and may result in direct injury or mortality of individuals. Removal of chaparral for the grading of access roads or tower sites would reduce or degrade suitable habitat for this species. Additionally, any coast horned lizards that go undetected by preconstruction surveys—in compliance with mitigation measure BIO-22 (Protect special-status herpetofauna)—and are present under vegetation, on roads, in streambed crossings, or in burrows, may be crushed by foot traffic, vehicles, or heavy equipment. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any coast horned lizards that may fall into them. It is expected that the risk of falling into an open hole would be greater overnight, as the construction noise and vibrations would be more likely to keep any coast horned lizards from approaching too close to the active site during the day. The construction work may also lead to dispersal of individuals from the area, which could lead to reduced fitness of those individuals if the adjacent habitat is less optimal. This dispersal could also lead to an increased risk of predation or competition if any animals are forced to relocate to unfamiliar territory.

Under mitigation measure BIO-22, if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where friable ground (for burrowing) may be limited or where harvester ants or other insects (for food) may be scarce, and may place increased strain on any individuals that may be present in the relocation area through increased competition for these resources. If suitable habitat within the area is limited, the carrying capacity may be exceeded and available resources, such as ants for food, may be at higher risk for local depletion. To help avoid this to the extent possible, these lizards would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated lizards would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-5340, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal California Gnatcatcher

There may be direct or indirect construction impacts to coastal California gnatcatcher, expected to be present due to several individuals identified at the boat launch ramps on both sides of Castaic Lake during 2010 and 2011 BRRTP bird use count surveys conducted by POWER, one recorded sighting within 1.3 miles of the proposed ROW (CDFG 2011), and suitable coastal California gnatcatcher habitat identified during 2008 habitat surveys east of Castaic Lake (POWER 2010). Construction-related impacts could include increased noise, traffic, or other human activities that would potentially disturb individual coastal California gnatcatchers that are foraging or passing through the Project area. These impacts would be localized and temporary.

Because of the location habitat patches identified in 2008 and those where individuals were located in 2010 and 2011, it is possible that some of these could be destroyed or degraded by construction, as some are directly within the corridor or nearby. No designated critical habitat for this species is along the proposed the Alternative 1 transmission line corridor. Preconstruction surveys would be conducted to determine usage of these areas by coastal California gnatcatchers, and appropriate temporal, spatial, and/or noise limitations would be imposed on construction in accordance with mitigation measure BIO-15 (Protect coastal California gnatcatcher and its habitat). Potential indirect effects to coastal California gnatcatchers from Project construction could include increased vulnerability to predation for individuals that move outside of their specific habitat patches during construction, possible inability to effectively forage due to construction-related stress or unfamiliarity with a new area, and habitat degradation resulting from the spread and establishment of non-native species or the deposition of dust onto surrounding vegetation as a result of vehicles or reestablishment of access roads if necessary.

General practices that would reduce short- or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- and long-term effects to coastal California gnatcatcher include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat) (Table 4.3.1-1).

Coastal Rosy Boa

With the Alternative 1 transmission line, there may be direct or indirect effects to coastal rosy boa. Coastal rosy boa is expected to be likely to occur based on the availability of desert habitat, chaparral, and scattered intermittent water sources along the proposed corridor west of San Francisquito Canyon. Construction of new towers and access roads would result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as this species may be found around water, although it is not tied to it (Stebbins 2003, Bartlett and Bartlett 2009). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may result in increased predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected. Under mitigation measure BIO-22 (Protect special-status herpetofauna), if individuals of this species are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where aquatic and rocky habitat may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas.

If suitable habitat within the area is limited, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, these snakes would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated snakes would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to coastal rosy boa include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to coastal rosy boa include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Desert Kit Fox

With the Alternative 1 transmission line, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs and habitat identified by POWER during 2008 desert habitat surveys in the Mojave Desert, including skeletal remains (POWER 2011). The desert kit fox sign occurred along the northern portion of the proposed transmission line for each action Alternative. Therefore, impacts to this species would be consistent within each action Alternative. Tower construction and grading of new or existing access roads would result in habitat loss, which may result in a temporary increase in food availability by providing less cover for wildlife that the desert kit fox preys upon as prey moves between habitat patches. Habitat degradation may also occur as a secondary effect of adjacent habitat loss or general construction access. This could result from the spread of non-native vegetation in the construction or access area or from excessive dust from construction in the desert area, necessitating the implementation of non-native weed prevention and dust control measures. Preconstruction surveys would identify any possible active or inactive desert kit fox burrows, but any unnoticed burrows may be crushed during construction, possibly resulting in injury of mortality of one or more kit foxes, should they be present inside. Any kit foxes around this shared corridor may be scared away from the area or to other burrows by construction noise or vibrations, but as human presence would only be temporary, it is expected that this would result in a short-term effect.

There is a 36-mile portion of the proposed Alternative 1 transmission line that currently has no existing parallel transmission lines on it in the general corridor that the transmission line would follow. However, the underground Los Angeles Aqueduct runs roughly alongside the proposed alignment, and there is already a large cleared area of linear disturbance in the Alternative 1 transmission line corridor with the aqueduct and the associated access road. Habitat loss due to access road construction may be less in this area due to the existing wide corridor of disturbance, which is parallel and adjacent to the proposed the Alternative 1 transmission line corridor through this area. General practices that would reduce short- or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Grasshopper Sparrow
There may be direct or indirect effects to grasshopper sparrow, expected to be present on Alternative 1 due to two recent records in the vicinity of the alignment, including one record that is 0.6 mile from the proposed ROW (CDFG 2011). Additionally, there is suitable habitat to support this species in foothill areas around the border of the ANF and in areas through Grasshopper Canyon. Because this species nests and forages on the ground in dense grassland (CDFG 2008), project construction in areas of dense grassland may have direct impacts on individual birds, including injury, mortality, stress, or disruption of essential activities. Preconstruction surveys for special-status species would help determine if grasshopper sparrow is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because this species is only present in the area during the nesting season, if LADWP avoids the nesting season it is expected that there would be no direct impacts to this species outside of habitat loss and degradation. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds in the grasshopper sparrow's preferred grassland habitat. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Le Conte's Thrasher
There may be direct or indirect effects to Le Conte's thrasher, expected to be present on Alternative 1 based on multiple recorded occurrences from 2005 within 2.5 miles of the proposed ROW in the Antelope Valley, including one occurrence within 0.3 mile (CDFG 2011).

This species was also documented on five different occasions in the upper desert portions of the Project area during fall 2010 and spring 2011 bird use count surveys conducted by POWER biologists. This species was detected in one location that is common to all alternatives, including Alternative 1; the remaining four detections were in areas that are common only to Alternatives 2, 2a, and 3. There is suitable desert scrub and Joshua tree habitat to support this species along much of the upper portions of this alternative, particularly north of the Neenach area. Because this species is often wary of humans (CDFG 2008), it may be difficult to detect within the Project area. However, preconstruction surveys for special-status species would still occur in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife) in efforts to determine where their territories are for biological monitoring or avoidance. Project construction may result in habitat loss for this species, which would then potentially reduce nesting and/or foraging areas in the Project's vicinity. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Habitat degradation may also occur as a result of the spread of non-native weed seeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. While this species is a year-round resident within the Project area, LADWP will avoid the nesting season to the extent possible to avoid having any direct impacts on nesting birds or their young.

General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Least Bell's Vireo

With the Alternative 1 transmission line, there is the potential for direct or indirect effects to least Bell's vireo, expected to be present near the Project area due to several sightings of a population between Castaic Lake and Castaic Lagoon, 0.5 mile from the transmission corridor (CDFG 2011). Tower construction and grading of new or existing access roads may result in habitat loss if there are any other riparian vegetation areas directly under the Alternative 1 transmission line that could be used by this species. If construction is occurring during nesting season, preconstruction/protocol surveys would attempt to locate any nests, as dictated by mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). However, if any active nests are present within the construction corridor and go unnoticed, they may be at risk for destruction, which would possibly result in injury or mortality. The location of the aforementioned population is within

0.5 mile of the proposed corridor, but the transmission line would be approximately 375 feet higher in elevation—and set back from the top of a hill—than the patch of suitable habitat where the vireos were previously identified, which is at the bottom of a canyon. It is not expected that any vegetation removal in this area would be required or that any vegetation would be directly impacted, as the corridor is not close enough and the paved road would likely be maintained by the management of the Castaic Lake State Recreation Area, of which this road is a part. While individual least Bell's vireos may be affected by the noise of passing vehicles if Project equipment enters and exits the ROW via the paved road that passes by the vireo site, further effects to least Bell's vireos or their habitat are not expected in this area due to its topographical features. Because the paved road that passes adjacent to the vireo sighting location is a public road within the Castaic Lake State Recreation Area, birds in the area likely have become acclimated to periodic disturbances from vehicular traffic on this roadway. Should construction vehicles enter and exit the ROW in this area from a different road, of which there are several in the area that could be used if necessary, direct impacts from construction to any vireos that may be present are expected to be negligible. Although there is little suitable habitat to support this species along the rest of this proposed corridor, impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo would constitute a take under ESA and CESA. Impacts to this species would require formal consultations with the federal and State resource agencies. Impacts to this and other riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian-dependent species.

General practices that would reduce short- or long-term effects to this bird species and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) (Table 4.3.1-1).

Loggerhead Shrike

With the Alternative 1 transmission line, there would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys (POWER 2011) just south of the Barren Ridge Switching Station. The sighting occurred just south of the Barren Ridge Switching Station, and is thus in an area that is common to all action Alternatives. Therefore, impacts to this species would be consistent within each action Alternative. Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. This would cause habitat degradation, which may make the area less appealing to loggerhead shrike individuals. It is expected that preconstruction surveys and/or biological monitoring would locate any nests within vegetation in the area, although if any nests are not located, injury or mortality of individuals could still result. Construction noise and human presence may cause birds to disperse from the area, potentially abandoning a nest if any birds are nesting nearby during construction.

There is a 36-mile portion of the proposed Alternative 1 transmission line that currently has no existing parallel transmission lines on it in the general corridor. Several individuals were found in this area during the aforementioned 2008 desert habitat surveys. However, the underground Los Angeles Aqueduct runs roughly alongside the proposed alignment, and there is already a large cleared area of linear disturbance in this area with the aqueduct and the associated access road. Habitat loss due to access road construction may be less for the Alternative transmission line due to the existing wide corridor of disturbance, which is parallel and adjacent to the proposed Alternative 1 transmission line corridor through this area. General practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Mohave Ground Squirrel, Southern Grasshopper Mouse, Tehachapi Pocket Mouse, and San Diego Black-tailed Jackrabbit

With the Alternative 1 transmission line, there may be direct or indirect construction impacts to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit. Mohave ground squirrel is expected to have a possibility of occurring due to availability of habitat, recorded occurrences, and POWER's 2008 desert habitat survey results in the Mojave Desert (POWER 2011, CDFG 2011). Southern grasshopper mouse and Tehachapi pocket mouse are expected to have a possibility of occurring based on availability of suitable habitat in the Mojave Desert and Antelope Valley, while San Diego black-tailed jackrabbit is expected to be present based on availability of suitable habitat and a sighting by POWER in 2009 just north of State Route 138 near Neenach, 0.4 mile from the proposed corridor. Tower construction and grading of new or existing access roads would result in habitat loss, resulting in a decrease in food availability for these species and possibly an increase in predation risk due to reduced vegetation cover. Preconstruction surveys would identify any possible burrows, but as ground squirrel burrows are often dug under large shrubs (Leitner et al. 1995, Reid 2006), they may be difficult to see, leaving a possibility that burrows would go unnoticed. These burrows may be crushed during construction, resulting in possible injury or death to one or more individuals and a reduction in suitable hiding places. Ground squirrels or grasshopper mice may be scared out of their burrows by construction noise or vibration, but because both species may maintain multiple home and accessory burrows (Reid 2006), it is not expected that this would result in the complete displacement of any individuals unless they happen to be currently residing only in the ROW. Displacement of either of these species from burrows may lead to injury or mortality due to exposure to predation from raptors or other predators. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any small mammals in the area that may fall into them.

There is currently a relative lack of information known about the ecology of the Tehachapi pocket mouse. It is believed that it is nocturnal and that it hibernates seasonally. It may also enter periods of inactivity when the ambient temperature is exceptionally high or low such as in summer or winter, respectively (Zeiner et al. 1990). It is assumed that impacts to the Tehachapi pocket mouse would be somewhat similar to the impacts that may occur to both ground squirrel and grasshopper mouse. Because black-tailed jackrabbits are usually nocturnal, construction at night would result in foraging disturbance and possibly injury or mortality from equipment (Reid 2006). During the day, they sleep in depressions under bushes, and if for any reason one should be caught suddenly and unexpectedly by construction, injury or mortality could again occur (Reid 2006). Although birthing occurs year-round, young are able to run within a couple hours of birth and would be less likely to be harmed or killed by construction than species whose young can take several weeks to become independently mobile (Reid 2006). However, dispersing young during the day could leave them open to increased predation risk. There is a 36-mile portion of the proposed Alternative 1 transmission line that currently has no existing parallel transmission lines on it in the general corridor that the new transmission line would follow. However, the underground Los Angeles Aqueduct runs roughly alongside the proposed alignment, and there is already a large cleared area of linear disturbance in this area with the aqueduct and the associated access road. Habitat loss due to access road construction may be less for the Alternative 1 transmission line due to the existing wide corridor of disturbance, which is parallel and adjacent to the proposed Alternative 1 transmission line corridor through this area.

General practices that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Mountain Plover

There may be direct or indirect effects to mountain plover, expected to have a possibility of occurring on Alternative 1 due to the availability of relatively flat, short grass habitat and agricultural fields in and around the proposed ROW between the northwestern limits of the ANF and the area around Neenach. Project construction may result in direct effects to foraging individuals, including injury, mortality, or stress, as well as habitat loss and degradation, particularly through the spread of non-native weed species in grassy areas. Preconstruction surveys for special-status species would help determine if mountain plovers are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and under BIO-2 (Prevent the spread of invasive weeds) LADWP would be required to prepare and implement a noxious weed control plan. Because this species is a winter resident and is not present in the area during the nesting season, Project construction would not impact its breeding cycle. However, because Project construction would be delayed to avoid the nesting season, this means that this species could still be present during construction. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals.

General practices that would reduce short-term or long-term effects to mountain plover include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to mountain plover include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

With the Alternative 1 transmission line, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are expected to be likely to occur based on the availability of suitable habitat along the Alternative 1 transmission line, such as riparian habitat and roosting habitat around Castaic Lake and in the forested portion of the alignment, and foraging habitat through the alignment in the grassland and shrubby habitats. Tower construction and grading of new or existing access roads would result in loss of foraging habitat and degradation in habitat quality, although tower construction may provide additional roosting habitat for the western mastiff bat. Pallid bats and Townsend's big-eared bats in particular are sensitive to human disturbance, and construction during summer months, when bat activity is higher, may cause a greater degree of disturbance to the bats, potentially leading to their abandonment of the area (Vaughan and O'Shea 1976, Piaggio 2005). This can indirectly lead to injury or mortality if it results in encounters with equipment or in decreased fitness at a new location due to unfamiliarity. The bats would likely return to the same roost the following season if it were still available (B. Doering personal communication 2011). Mating for pallid bats occurs from October to February, birth from April to July, and final weaning in August; mating in Townsend's big-eared bats generally occurs between October and February, with birth between May and July; mating in western mastiff bats typically begins in early March with birth ending in September; and mating in western red bats occurs in late summer or early fall with birth the following summer (Reid 2006). Construction during certain time periods of these windows may be more disturbing to some bat species than others, if they are present.

Should a bat roost be disturbed by construction, complete abandonment of the roost may result, particularly for more sensitive species like pallid bats or Townsend's big-eared bats. This may lead to complete nesting failure for the season, resulting in a loss of that year's new bat births. Because bats are mainly nocturnal, any night construction would disturb them, disrupting foraging and potentially leading to injuries. Disruption of hibernation is unlikely given the generally warm winters in Southern California. McNab (1974) suggests that only bats that are both small and do not cluster in groups can hibernate when the environmental temperature is above 14°C (57.2°F). Pallid bats may roost alone or in groups from two to several hundred and, although they will hibernate in cold parts of their range, they overwinter in coastal California (Rambaldini 2005). They have been reported to remain active at temperatures between -5°C (23°F) and 10°C (50°F). Townsend's big-eared bats may hibernate in groups of single individuals to several hundred; in some areas, mainly in the eastern U.S., they may hibernate in groups up to several thousand (Piaggio 2005). Western mastiff bats cluster in groups of 30 to several hundred and do not undergo long periods of hibernation, instead remaining periodically active throughout the winter (Siders 2005). Although winter behavior of western red bats is not well understood, it is possible that they also do not hibernate for long periods, as this species has been reported to be found foraging during the winter on warm days, even in northern California (Bolster 2005). It is likely that bats in the Project area would periodically enter states of torpor but would generally remain relatively active compared to bats in colder parts of the country, where hibernation is more feasible.

Under mitigation measure BIO-21 (Protect sensitive bat species), if any bat roosts or hibernacula are identified within the Project area, LADWP may construct a replacement roost site with the assistance of a qualified biologist. According to the mitigation measure, the replacement sites would be located close to the originals and would be left open to allow bats to find and colonize them on their own; the existing roost sites in the construction area would only be closed after the bats had left. This may result in some stress to the bats or the system, but because the bats would be colonizing the replacement sites on their own and the sites would be located close to the originals, it is less likely that this would result in any severe effects or any risks to exceeding carrying capacity. Alternative roost sites would be chosen and constructed with concurrence and guidance from USFS and/or BLM, if applicable.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

Tricolored Blackbird

There may be direct or indirect effects to tricolored blackbird, which is expected to be present on Alternative 1 based on three CNDDB records since 2000 in the vicinity of the alignment; the closest of these is less than one mile away and is from 2009 (CDFG 2011). It may also occur in the vicinity of Castaic Lagoon/Lake, but there are no records indicating such. Foraging habitat and behavior may be directly affected by construction through or close to any prominent foraging grounds. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), while preconstruction surveys for special-status species would help determine if tricolored blackbird is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Breeding and nesting areas are unlikely to be affected, as Project construction would not approach close enough to any suitable breeding areas as to have an effect. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Western Spadefoot Toad

With the Alternative 1 transmission line, there would be direct or indirect effects to western spadefoot toad, expected to be present due to the observation of tadpoles at a marked reservoir in Grasshopper Canyon approximately 0.5 mile from the proposed ROW (CDFG 2011). There is also suitable grassland habitat in many locations along the proposed transmission line, and several cattle ponds in the canyon just west of the proposed corridor, south of Templin Highway, that may be able to support this species. Tower construction and grading of new or existing access roads would destroy or degrade grassland habitat, while excessive disturbance in streambed crossings may degrade wash habitat or possibly alter hydrology. The aforementioned cattle ponds are not expected to be affected by construction unless runoff from the work area comes down the canyon. Direct injury or mortality from crushing by equipment or vehicles may occur, while passage through any wet streambeds may drain water away from tadpole sites, should they be present. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that do not contain the characteristics necessary for population sustainability, such as areas that have the substrate to support temporary pools. It may also place increased strain on any individuals that may be present in the relocation area through increased competition for resources, including breeding habitat. If suitable habitat within the area is limited, the carrying capacity may be exceeded and may put additional strain on population growth. To help avoid this to the extent possible, individuals would be relocated with concurrence and guidance from BLM and/or CDFG, if applicable. It is expected that any relocated spadefoots would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

There may be direct or indirect effects to white-tailed kite, expected to have a possibility of occurring on Alternative 1 based on the availability of suitable habitat in areas going through the Antelope Valley and in areas along the southern end of the alignment in the vicinity of Castaic Lake and Grasshopper Canyon. Dense-topped trees including oaks and conifers are scattered and clustered throughout the alignment south of State Route 138, within the ANF. These could provide nesting or perching opportunities for kites, but are not expected to be removed or trimmed unless in direct conflict with the transmission line configuration. While aquatic foraging habitat is not expected to be affected by the Project, terrestrial foraging habitat, such as grasslands, meadows, and farmlands, may be lost or degraded as a result of construction. If so, this would reduce the available foraging habitat in the area and may require any local white-tailed kites to move to new foraging sites. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Migratory Birds

In 2008, an avian risk assessment was begun for BRRTP, in which the entire Project area was surveyed and assessed for a number of factors that are believed to indicate higher levels of avian risk (POWER 2011). The more of these factors that were applicable to any given mile of the Project, the higher risk that mile was determined to have to avian species. The avian risk factors that were developed for BRRTP are listed in Appendix M of the Biological Resources Technical Report.

According to the criteria, the entire Kern County portion of the Alternative 1 transmission line is estimated to be a low risk area for bird species. The most common applicable risk factor in this area was high wind speeds; however, several miles would also be within 0.5 mile of a line divergence or convergence, and 33 miles of the proposed transmission line north of Kern County do not have existing parallel transmission lines in the proposed corridor. All risk factors except one—line crosses a reservoir or lake—were present in various locations throughout the Los Angeles County portion of the Alternative 1 transmission line. These include:

- a new transmission corridor;
- the line crossing a recorded wetland; a wetland being within 0.5 mile of the transmission line;
- a reservoir or lake within 0.5 mile of the transmission line;
- the line crossing through two separate habitat usage types;
- the line crossing a valley or canyon perpendicularly;
- the line crossing perpendicular to prevailing winds;
- the line crossing through an area with wind speeds on average greater than 16.8 mph;
- a water body with established emergent vegetation being within 0.5 mile of the transmission line;
- a line convergence or divergence within 0.5 mile of the transmission line;
- a 40+% slope within 0.5 mile of the transmission line;
- a nearby ridgeline;
- a ridge crossing perpendicular to the line; and
- a valley nearby to the line.

The reasons for why these factors increase collision and/or electrocution risk to birds are listed in Appendix M of the Biological Resources Technical Report. It is expected that collision and electrocution would be the biggest risks to migratory birds from the BRRTP. Presence of construction and/or humans in any particular area may cause birds to avoid specific areas as they move through the Project area, but presence of the transmission line would not otherwise prevent birds from crossing under or over the conductors.

GP-11 would reduce short- and long-term effects to migratory bird species in the BRRTP area and GP-8 would protect local and migratory bird species that may occur, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

CEQA Significance
Implementation of the Project would result in the direct and permanent loss of both common and special-status plant communities. The spread of existing invasive populations or establishment of new noxious species in previously undisturbed areas as a result of construction would be considered a substantial disturbance and a significant impact without mitigation. With the implementation of the proposed General Practices and Mitigation Measures, potential impacts would be reduced to less than significant. In addition, adequate mitigation would be achieved through the restoration of disturbed areas and acquiring lands to replace functional habitat values. Construction-related effects to common wildlife are typically not considered significant under CEQA. Alternative 1, without the implementation of mitigation measures, has the potential to violate the Migratory Bird Treaty Act. Finally, construction could potentially impact special-status species. However, with the implementation of GPs and mitigation measures, the potential impacts along Alternative 1 including the common Project components and the Alternative 1 transmission line, would be reduced to less than significant.

Alternative 2 – LADWP's Proposed Action and Federal Agency Preferred Alternative

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components (new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Canyon Switching Station, and expansion of the Barren Ridge Switching Station) would be the same for each action Alternative. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Implementation of the proposed Project would require construction to occur within a broad array of habitat types. The Alternative 2 230 kV double circuit transmission line would cross 61 miles and require new access along 0.1 mile of the new transmission line. Construction of Alternative 2 would result in the permanent loss of 57 to 70 acres and temporary loss of 398 to 399 acres of vegetation (Table 4.3.1-10). Anticipated permanent and temporary acres of disturbance for the Alternative 2 transmission line would be less compared to the transmission lines for Alternatives 1 and 3. The reduced ground disturbance along the Alternative 2 transmission line would be due to the presence of existing access roads (both utility and OHV) and relatively flat terrain when compared to the Alternative 1 transmission line. Due to the existing access along the proposed Alternative 2 transmission line, more biological data was collected. Detailed vegetation mapping and special-status plant and wildlife surveys were conducted along this alignment from 2008 through 2010, including surveys along access roads. While LADWP intends to avoid special-status plant communities to the maximum extent possible and would flag these known resources for avoidance, construction of the Project would still result in disturbance to a variety of plant communities and wildlife habitat. This would lead to an increased loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. Installation and development of the proposed transmission line and activities, such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction, could cause direct injury or mortality to wildlife.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.1-10). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impacts to the ROW within any locations that these resources are known to occur. Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect or direct impacts that may occur from construction vehicles or equipment accessing the Project site. Species that were reviewed and considered to be absent or unlikely to occur are not analyzed below. However, these species are analyzed in detail in the Biological Resources Technical Report.

TABLE 4.3.1-10. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH THE ALTERNATIVE 2 230 KV DOUBLE CIRCUIT TRANSMISSION LINE WITHIN THE 500-FOOT IMPACT CORRIDOR

Alternative 2 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American badger	12.4	12.4	1.5	1.5
Desert tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo toad	25.2	26.4	4.8	6.9
California red-legged frog	20.0	21.2	4.0	6.0
Least Bell's vireo	23.9	25.1	4.5	6.5
Southwest willow flycatcher	34.3	35.5	6.3	9.3
Unarmored threespine stickleback	7.2	7.2	1.8	3.2
Non-modeled Wildlife Habitat				
American badger	0.7	0.7	0.1	0.1
Desert tortoise	10.4	10.4	1.3	1.3
Kit fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert tortoise	276.9	276.9	34.1	34.1
Mohave ground squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	50.6	51.8	9.0	12.4

Alternative 2 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Plant Species on ANF lands				
Short-joint beavertail	9.8	9.8	1.5	1.9
Slender mariposa lily	13.0	13.0	2.1	3.0
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural land	78.9	78.9	10.3	11.1
California annual grassland	24.4	24.4	3.9	5.3
Chamise chaparral	38.6	39.4	6.9	10.1
Barren/developed	35.4	35.4	6.6	10.1
Joshua tree woodland	34.4	34.4	4.2	4.2
Mojave creosote bush scrub	149.9	149.9	18.5	18.5
Mojave wash scrub	8.3	8.3	1.0	1.0
Riversidian sage scrub	10.1	10.1	1.7	2.4
Southern mixed chaparral	13.0	13.0	2.9	5.1
Mapped Weed Species on ANF lands				
Blessed thistle	0.7	0.7	0.1	0.1
Cheatgrass	0.7	0.7	0.1	0.1
Common gum cistus	0.7	0.7	0.1	0.1
Cretan rockrose	1.3	1.3	0.2	0.2
Indian hedgemustard	10.4	10.4	1.37	1.52
Prickly Russian thistle	2.6	2.6	0.4	0.6
Saltcedar	0.7	0.7	0.1	0.1
Smilograss	3.9	3.9	0.6	0.7
Spanish broom	2.0	2.0	0.2	0.2
Tocalote	3.9	3.9	0.5	0.5
Tree tobacco	1.3	1.3	0.3	0.4
Riparian Communities				
Southern coast live oak riparian forest	3.0	3.4	0.6	0.7
Southern riparian scrub	0.7	0.7	0.2	0.3
Southern sycamore alder riparian woodland	2.3	2.3	0.5	0.9
Biological Protected Area				
San Andreas Rift Zone SEA	12.4	12.4	2.7	4.6
Santa Clara River SEA	4.6	4.6	1.0	1.8

Impacts to Native Vegetation

Although construction of the BRRTP would be conducted in a way that avoids impacts to native plant communities to the maximum extent possible, construction of the Alternative 2 transmission line would still result in removal and degradation of native plants and their communities. See Impacts to Native Vegetation under Alternative 1, above, for discussion of permanent versus temporary impacts and expected direct and indirect effects to native vegetation, which is relevant to the Alternative 2 transmission line.

In total, the Alternative 2 transmission line would permanently disturb a maximum of 1.9 acres of vegetation identified as rare and worthy of consideration by the CDFG (67.4 acres of non-rare vegetation) and would temporarily impact a maximum of 6.4 acres of rare vegetation (392.8 acres of non-rare vegetation). Types of California vegetation that are considered to be rare and worthy of consideration can be found in CDFG's "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Additional acreages of land disturbance may occur, but the vegetation communities impacted are unknown at this time, as final engineering has not been conducted. Table 4.3.1-9 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of the Alternative 2 transmission line within all jurisdictions that occur in the corridor.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

Direct impacts to RCAs are anticipated to occur along the Alternative 2 transmission line. Although the proposed centerline would avoid RCAs, access roads would parallel or cross 66 RCAs, 50 of which could be affected by Project construction. Measures would be implemented to reduce impacts to RCAs. These include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, GP-54, and mitigation measures), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), and BIO-6 (Implement a Worker Environmental Awareness Program) (Table 4.3.1-1).

LADWP has indicated that GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Special-status Plant Impacts

At least sixty special-status (federally and State listed TECP, USFS Sensitive/Watch, CNPS listed) plant species have the potential to occur in areas of suitable habitat along the Alternative 2 transmission line. Detailed descriptions, habitat preferences, and the known distribution of these species are presented in Appendix F of the Biological Resources Technical Report (POWER

2011). Many of these plant species are ephemeral in nature and include many spring-flowering annuals and herbaceous perennial species that are generally only visible during optimally timed field surveys in years of average rainfall or greater. Field surveys were conducted in 2008, 2009, and 2010 within portions of the proposed Project area.

There are two special-status plant species that are known to occur within the Alternative 2 transmission line impact corridor (Table 4.3.1-10):

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*).
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*).

In addition, there are 58 special-status plant species that have the potential to occur within Alternative 2:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)

- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

For a discussion of the potential direct and indirect impacts to the known populations of slender mariposa lily and beavertail cactus and other special-status plants that may be found along the Alternative 2 transmission line, see above discussion for the Alternative 1 transmission line, as impact types are expected to be the same. In April 2009, LADWP conducted unauthorized road grading along approximately five miles of City Highline Motorway Fire Road, which would provide access along much of the proposed Alternative 2 transmission line. A byproduct of the grading was that the overall width of the road along this section was increased. While areas used for access within this five-mile portion of the road are not expected to require any road widening for construction access, access and spur roads outside of this area may require widening. This would potentially remove habitat that is suitable for one or more of these species or remove individuals that are undetected during preconstruction surveys. In terms of impacts to biological resources, the only difference between the transmission lines for action Alternatives is that a significantly greater number of populations and individuals of both slender mariposa lily and beavertail cactus would be along the Alternative 2 transmission line (2,400 lilies, 34 cactus) than the transmission lines for either Alternatives 1(11 lilies, 40 cactus) or Alternative 3 (420 lilies, 5 cactus). It is therefore expected that impacts to these sensitive species would be greater for the Alternative 2 transmission line than for the transmission lines for either Alternative 1 or 3.

General practices that would reduce short- or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

For a discussion of invasive plant and herbicide use impacts on native vegetation, common wildlife, and special-status plants and wildlife within the Alternative 2 transmission line alignment, see above discussion for the Alternative 1 transmission line, as impact types and magnitude are expected to be very similar. One potential difference may be that the Alternative 2 transmission line would have a greater number of special-status plants that may be impacted by the expansion of invasive plants, and the subsequent use of herbicide to control them, than the transmission lines for either Alternatives 1 or 3.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2900.

Wildlife Impacts

There are two special-status wildlife species that are known to be present within the Alternative 2 transmission line impact corridor (Table 4.3.1-10):

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

American Badger

There may be direct or indirect construction impacts to American badger, expected to be present based on the identification of active and inactive badger burrows during surveys conducted in and around SCE's Antelope-Pardee Project in the Antelope Valley (LSA 2007a). The American badger occurs along the northern portion the transmission line of all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to American badger include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6

(Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Desert Tortoise

The desert tortoise occurs along the northern portion of the transmission line of all action Alternatives. Recorded occurrences in the CNDDB are primarily concentrated in the area south of the Barren Ridge Switching Station that is shared by all Alternatives. Therefore, impacts to this species (described under Alternative 1) would be the same within each action Alternative through this area. Refer to the Alternative 1 section for a full discussion of the potential impacts to this species within the shared corridor. Where Alternative 1 splits from Alternatives 2, 2a, and 3, permanent changes to habitat would be slightly different in that there are two existing transmission line corridors along the Alternatives 2 and 3 corridor, and no existing corridors along the proposed Alternative 1 corridor. However, the Los Angeles Aqueduct runs roughly parallel to Alternative 1 and the area around this is mostly graded and clear of vegetation already. Therefore, there would be slightly more vegetation loss along the corridor shared by Alternatives 2 and 3 due to the linear patches of habitat that are still present around the existing transmission line corridors; construction along Alternative 2 would also have slightly more habitat fragmentation because of these existing corridors. Construction activities that resulted in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a take of federally and State-listed species, as described above, and would constitute an impact that would be authorized only through the context of a Biological Opinion issued from the USFWS. General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

No other special-status species were found within the Alternative 2 transmission line 500-foot impact corridor. There are, however, species that are present, have the potential to occur, or have habitat within one mile of the impact corridor. These include:

- Arroyo chub (*Gila orcuttii*)
- California condor (*Gymnogyps californianus*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Golden eagle (*Aquila chrysaetos*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Burrowing owl (*Athene cunicularia*)
- California red-legged frog (*Rana draytonii*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)

- Mountain plover (*Charadrius montanus*)
- Pallid bat (*Antrozous pallidus*)
- Peregrine falcon (*Falco peregrinus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Swainson's hawk (*Buteo swainsoni*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Tricolored blackbird (*Agelaius tricolor*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Western spadefoot toad (*Spea hammondii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- White-tailed kite (*Elanus leucurus*)

The Alternative 2 transmission line would parallel San Francisquito Creek for five miles and would cross the creek before entering the unincorporated community of Green Valley. The point the proposed centerline would cross the creek is from ridgeline to ridgeline. One access road crossing San Francisquito Creek, in Bee Canyon, would be used during construction to access the transmission line. This road would not cross through any USFWS designated critical habitat. For the five miles that the Alternative 2 transmission line would parallel San Francisquito Creek, these USFWS and USFS habitats would be well outside the 500-foot proposed transmission line corridor (see Appendices A and B of the Biological Resources Technical Report). During several field surveys, it was determined that amphibian species would not be able to access the Alternative 2 transmission line alignment due to steep ridgeline that separates the modeled wildlife habitats and the Project alignment(Appendix E of the Biological Resources Technical Report). Disturbance to these habitats could occur through indirect impacts like displacement or disturbance from noise and associated construction activities. Displacement of wildlife species could occur, as species would typically seek to avoid areas where construction activities are initiated. The extent of such displacement would be partially dependent upon the type of construction activity as well as the duration and intensity. Individuals displaced from the areas cleared of native vegetation could be jeopardized if adjacent habitats are already at carrying capacity, if only less suitable habitat is available, if there is a reduction in food availability, or if the animals are exposed to an increased risk of predation. The Alternative 2 transmission line corridor is utilized on a regular basis by LADWP maintenance crews and by the public for the use of off-road vehicles. Wildlife movement would not be directly impaired from the additional transmission line ROW within this corridor, which may also have a reduced risk of collision and/or electrocution for avian species than would an entirely new transmission corridor, although there are several other factors that would contribute to avian power line interaction risks, such as topography, surrounding vegetation, or availability of nearby water. However, the transmission line ROW would likely cause some behavioral responses in some species (such as avoidance or alteration of migration routes) that may cause added stress during an ecologically stressful period (migration).

Construction activities could result in accidental exposure to contaminants or fire, or increased legal and illegal killing of wildlife. Accidental spills during equipment maintenance or refueling could result in temporary exposure to hazardous contaminants. Because spill prevention plans would be in place and impacted areas would be immediately reclaimed, and exposure would be temporary and restricted to the site of spill, impacts to wildlife would be minimal. Accidental fires associated with construction and maintenance vehicles could result in the temporary loss of habitat. In accordance with mitigation measure F-2a, LADWP shall develop and implement a multi-agency Construction and Maintenance Fire Prevention Plan for the BRRTP and monitor construction activities to ensure implementation and effectiveness of the plan. This Fire Prevention Plan would be applicable to the entirety of the Proposed Action or approved Alternative during all construction and maintenance activities. Plan reviewers shall include ANF, BLM, CAL FIRE Contract Counties, and City fire agencies.

Burrowing Owl
With the Alternative 2 transmission line, there may be direct or indirect construction impacts to burrowing owl, likely to occur based on the presence of suitable habitat and known occurrences of this species and its burrows in the Antelope Valley. Because owl burrows and live owls have been detected throughout the vicinity of the Project area (LSA 2007b, CDFG 2011), including all four action Alternatives, impacts to this species would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

California Condor
There would be direct or indirect impacts to California condor associated with implementation of the Proposed Action. This species has a possibility of occurring based on GIS data supplied by USFWS that shows some condor tracking data located in the vicinity of the proposed Alternative 2 transmission line in the ANF (USFWS 2008, USFWS 2009). Tower construction and grading of new or existing access roads would result in habitat and vegetation loss. It is not expected that the amount of vegetation and habitat loss that would occur on this corridor would have a substantial effect on this species, as juveniles have been measured foraging over 140 miles and nesting pairs typically fly 31 to 44 miles in a single day (USFWS 1996), and can likely adapt to the relatively minor change. Construction for the Project could cause short-term temporary behavioral avoidance of the area due to increased activity or noise. Condors are known to become alarmed by loud noises from distances of over one mile, and may avoid coming close to or nesting near these areas or may alter their behavior to avoid the activity (USFWS 1996). However, Project construction should not involve overly excessive noises such as blasting, and LADWP would enforce noise reduction measures such as using noise reduction elements on construction equipment and minimizing vehicle idling time. Additionally, data supplied by USFWS suggests that condors in this area have been fly-overs and are unlikely to occur with any

regularity. Construction may result in trash or microtrash being left behind by the crews. Any leftover trash or microtrash has the possibility to be ingested by condors, and subsequently regurgitated for chicks to feed on, leading to chick mortality (USFS 2008c). This is a short-term impact that would be addressed by implementation of BIO-18 (Protect California condor) and the creation of a Proper Disposal of Construction Waste Plan for the Project. As stated in mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program), road kill within the construction area would be reported within 24 hours to the USFS or BLM if on NFS or BLM land, respectively, or to the local animal control center if on non-federal lands. The construction of the towers and presence of new transmission lines may stress condors or increase the risk of a collision, depending on eventual placement and proximity to existing lines. While the transmission lines and towers would be constructed according to APLIC guidelines (2006), reducing the chance for electrocution, in certain isolated areas, such as where transmission lines span across canyons or are located along ridgelines, there would be greater risks for condor collisions. As condors continue to expand their current range into their historical distribution, this risk could increase in mountainous areas where condors are more likely to occur. Based on the number of sightings in this area, it is highly unlikely that any California condors are nesting near the proposed ROW (USFWS 2008, USFWS 2009).

General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors.

California Spotted Owl

With the Alternative 2 transmission line, there may be direct or indirect effects to California spotted owl, which has a possibility of occurring due to availability of suitable habitat in San Francisquito Canyon, Clearwater Canyon, Grass Mountain, Pettinger Canyon, Spunky Canyon, Baird Canyon, and Craig Spring as determined during 2008 and 2009 surveys (POWER 2009b, POWER 2010d). Habitat degradation and/or loss would occur for this species on this Alternative, as many of the areas that were determined to be suitable habitat during surveys are directly within the survey corridor. Depending on specific and final tower locations, these may be able to be spanned or avoided. However, they may be impacted by construction if they cannot be avoided, such as by tree trimming where necessary for equipment access. This could, by extension, lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar to or unsuitable for them; however, implementation of land management plan standards and mitigation measures should minimize impacts to nesting spotted owls. Implementation of ANF Land Management Plan Standard S20 would restrict construction within 0.25 mile of any California spotted owl nest site or activity center with an unknown nesting status during the breeding season (February 1 – August 15) unless Forest Service protocol surveys determine that spotted owls are absent. This would reduce impacts to nesting California spotted owls and their young. This standard is incorporated into mitigation measure BIO-19 (Protect California spotted owl). Dust would likely be a factor from construction, and would, without proper use of a water truck or equivalent mechanism, have the potential to drift onto adjacent vegetation, degrading its quality. General practices that would reduce short- or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl) (Table 4.3.1-1).

Coast Horned Lizard

With the Alternative 2 transmission line, there would be direct or indirect effects to coast horned lizard, expected to be present within one mile of the transmission line due to numerous sightings within San Francisquito Canyon by POWER biologists in 2009, including several near Fire Camp 14 and another near South Portal Canyon. Coast horned lizards have been identified in the vicinity of the transmission line ROW for both Alternatives 1 and 2, and are expected to be present on both alignments in the vicinities of the existing transmission lines. Therefore, impacts to this species (described under Alternative 1) would be consistent within both Alternatives, although Alternative 1 is 22 miles longer than Alternative 2. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal Rosy Boa, San Bernardino Ringneck Snake, and Two-striped Garter Snake

With the Alternative 2 transmission line, there may be direct or indirect effects to San Bernardino ringneck snake, coastal rosy boa, or two-striped garter snake. San Bernardino ringneck snake has a possibility of occurring based on availability of suitable rocky habitat, particularly along the western side of San Francisquito Canyon, and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009 near LADWP's Power Plant 1, while two-striped garter snake is expected to be likely to occur based on several perennial water stretches in San Francisquito Canyon (between South Portal Canyon and Bee Canyon and in the St. Francis Dam Reach of San Francisquito Creek) and Dry Canyon (Drinkwater Flat). Construction of new towers and access roads would result in vegetation and habitat loss, and any movement of rocky areas for construction purposes may destroy additional habitat and refuges. Moving rocks may also result in injury or mortality if any snakes are present in between the rocks or on the ground adjacent to them. Excessive disturbance to washes or streambeds may have additional impacts to habitat, as these snake species are attracted to water sources, particularly two-striped garter snake (Stebbins 2003). Disrupting rodents or herpetofauna could also cause reductions in food supply for any snakes that may be in or near the ROW, while displacing snakes into the open may cause increases in predation. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any snakes in the area that may get trapped in them. Finally, individuals may be unintentionally run over by construction traffic should they be basking on the ground and undetected. General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if individuals of any of these species are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where aquatic, moist, or rocky habitat may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, these snakes would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated snakes would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Desert Kit Fox

With the Alternative 2 transmission line, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs and habitat identified by POWER during 2008 desert habitat surveys in the Mojave Desert, including skeletal remains (POWER 2011). The desert kit fox sign occurred along the northern portion of the proposed transmission line for all action Alternatives. Therefore, impacts to this species (described under

Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Golden Eagle, Peregrine Falcon, and Swainson's Hawk

With the Alternative 2 transmission line, there may be direct or indirect effects to Swainson's hawk, peregrine falcon, or golden eagle. Swainson's hawk and peregrine falcon both have a possibility of occurring on this alignment due to available water sources in San Francisquito Creek and Drinkwater Reservoir (when full) and available nesting habitat on the ledges and boulders along the western edge of San Francisquito Canyon. Swainson's hawks were also identified by POWER biologists directly above the Alternative 2 transmission line alignment in 2009 just north of the ANF border at Haskell Canyon, but these were deemed to be most likely migrants. The CNDDB (CDFG 2011) contains three records for Swainson's hawk pair sightings within three miles of the desert portion of the Alternative 2 transmission line. There are also nesting opportunities for falcons on the buildings and structures throughout San Francisquito Canyon, such as power plants, residences, and existing transmission lines. Golden eagle is expected to be present in the general area due to multiple sightings in the project area for the Alta-Oak Creek Mojave Project (Kern County 2009). Construction of new towers and grading of new or existing access roads would result in vegetation and habitat loss to this species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality from construction is not expected based on the most recent nesting locations and nesting habits, but should any individuals nest near the proposed ROW, they may be displaced by construction disturbance depending on the amount of ambient disturbance in the area, which is greater in the central Green Valley portion of the alignment than either the northern (Antelope Valley) and southern (Dry Canyon) portions. If this is the case, adults and/or their young would likely need to relocate, which could result in indirect injury or mortality as they move to inhabit new locations; however, implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. These species would be unable to forage in areas of active construction. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures would need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures, and may collide with power lines upon landing in or leaving a water body (APLIC 2006). However, this transmission line would be directly adjacent to several other transmission lines, so it is unlikely that the addition of this transmission line would result in a substantial increase in risk to these species from colliding with transmission lines along this alignment.

General practices that would reduce short- or long-term effects to golden eagle, Swainson's hawk, and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to golden eagle, Swainson's hawk, and peregrine falcon include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Grasshopper Sparrow
There may be direct or indirect effects to grasshopper sparrow, expected to have a possibility of occurring on Alternative 2 due to availability of suitable habitat in locations such as Leona Valley and along the proposed ROW south of Bee Canyon. Because this species nests and forages on the ground in dense grassland (CDFG 2008), project construction in areas of dense grassland may have direct impacts on individual birds, including injury, mortality, stress, or disruption of essential activities. Preconstruction surveys for special-status species would help determine if grasshopper sparrow is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because this species is only present in the area during the nesting season, if LADWP avoids the nesting season it is expected that there would be no direct impacts to this species outside of habitat loss and degradation. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds in the grasshopper sparrow's preferred grassland habitat. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Le Conte's Thrasher
There may be direct or indirect effects to Le Conte's thrasher, expected to be present on Alternative 2 based on multiple recorded occurrences from 2005 within 3.5 miles of the proposed ROW in the Antelope Valley (CDFG 2011), including one occurrence within one mile.

These are the same occurrences that are close to Alternative 1. This species was also documented on five different occasions in the upper desert portions of the Project area during fall 2010 and spring 2011 bird use count surveys conducted by POWER biologists. All five detections occurred in areas along the proposed Alternative 2 transmission line ROW. There is suitable desert scrub and Joshua tree habitat to support this species along much of the upper portions of this alternative. Because this species is often wary of humans (CDFG 2008), it may be difficult to detect within the Project area. However, preconstruction surveys for special-status species would still occur in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife) in efforts to determine where their territories are for biological monitoring or avoidance. Project construction may result in habitat loss for this species, which would then potentially reduce nesting and/or foraging areas in the Project's vicinity. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Habitat degradation may also occur as a result of the spread of non-native weed seeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. While this species is a year-round resident within the Project area, LADWP will avoid the nesting season to the extent possible to avoid having any direct impacts on nesting birds or their young.

General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

There is the potential for direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they have a possibility of occurring based on availability of suitable habitat in San Francisquito Canyon north of the northern terminus of the old San Francisquito Road as determined during 2008 surveys (POWER 2009a). Tower construction and grading of new and existing access roads would result in habitat and vegetation loss, as well as possible injury or mortality. Tree trimming is likely to allow vehicles and equipment to pass without causing damage to trees by breaking branches; this would result in an unknown amount of habitat loss and possibly injury or mortality of adults or young. Mitigation measure BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) is expected to help reduce the possibility of direct injury or mortality through preconstruction/protocol surveys for birds or nests. Further habitat degradation may occur through the deposition of dust or other contaminants onto leaves, which can reduce their vigor and reduce habitat quality in the area. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo and southwestern willow flycatcher would constitute a take under ESA, as well as under CESA for the vireo only. Impacts to these listed species would require formal consultations with the federal and State resource agencies. Impacts to riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian-dependent species.

General practices that would reduce short- or long-term effects to these bird species and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) (Table 4.3.1-1).

Loggerhead Shrike

With the Alternative 2 transmission line, there would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys just south of the Barren Ridge Switching Station (POWER 2011). The sighting occurred just south of the Barren Ridge Switching Station, and is thus in an area that is common to the transmission line for all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Mohave Ground Squirrel, Southern Grasshopper Mouse, Tehachapi Pocket Mouse, and San Diego Black-tailed Jackrabbit

With the Alternative 2 transmission line, there may be direct or indirect construction impacts to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit. Mohave ground squirrel is expected to be likely to occur due to availability of habitat, recorded occurrences, and POWER's 2008 desert habitat survey results in the Mojave Desert (POWER 2011, CDFG 2011). Southern grasshopper mouse is expected to have a possibility of occurring based on availability of suitable habitat in the Mojave Desert, while Tehachapi pocket mouse is expected to have a possibility of occurring based on availability of suitable habitat in the Mojave Desert and Antelope Valley and on historical occurrences in the Lake Hughes and Elizabeth Lake areas (CDFG 2011). San Diego black-tailed jackrabbit has a possibility of occurring based on availability of suitable habitat, a recent recorded occurrence approximately one mile west of San Francisquito Canyon (CDFG 2011), and a sighting by POWER in 2010 south of Elizabeth Lake on the edge of the ANF. Because these small mammal species all also have the potential to occur on Alternative 1 and both Alternatives would have a new 230 kV transmission line corridor, the potential effects to these species would be the same on Alternative 2 as they are on Alternative 1. Refer to Alternative 1 for a full discussion of the potential impacts to these species.

General practices that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Mountain Plover

There may be direct or indirect effects to mountain plover, expected to be present on Alternative 2 due to a 2011 recorded sighting one mile from the proposed ROW in the Antelope Valley, as well as the general availability of relatively flat, short grass habitat and agricultural fields in and around the proposed ROW in the Antelope Valley. Project construction may result in direct effects to foraging individuals, including injury, mortality, or stress, as well as habitat loss and degradation, particularly through the spread of non-native weed species in grassy areas. Preconstruction surveys for special-status species would help determine if mountain plovers are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and under BIO-2 (Prevent the spread of invasive weeds) LADWP would be required to prepare and implement a noxious weed control plan. Because this species is a winter resident and is not present in the area during the nesting season, Project construction would not impact its breeding cycle. However, because Project construction would be delayed to avoid the nesting season, this means that this species could still be present during construction. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals.

General practices that would reduce short-term or long-term effects to mountain plover include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to mountain plover include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat
With the Alternative 2 transmission line, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are likely to occur based on the availability of suitable habitat along the Alternative 2 transmission line, such as rocky areas for roosting on the western side of San Francisquito Canyon; water in San Francisquito Canyon, Dry Canyon, and Drinkwater Reservoir; and foraging habitat in the shrubs and grassland throughout the alignment. Because these bat species all also have the potential to occur on Alternative 1, the potential effects to them as a result of constructing new tower sites and grading and maintaining new or existing access roads would be roughly the same between the two Alternatives. Refer to Alternative 1 for a full discussion of the potential impacts to these species.

General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

Tricolored Blackbird
There may be direct or indirect effects to tricolored blackbird, which is expected to be present on Alternative 2 based on comments provided by the Leona Valley Town Council (LVTC) and nesting habitat in areas such as Elizabeth Lake, Lake Hughes, smaller ponds throughout the Leona Valley, and San Francisquito Canyon in the vegetated streambed north of the St. Francis Dam site, and foraging habitat in agricultural areas in the Leona Valley and Antelope Valley. Foraging habitat and behavior may be directly affected by construction through or close to any prominent foraging grounds. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), while preconstruction surveys for special-status species would help determine if

tricolored blackbird is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). If birds are present and undetected then their foraging behavior may be disrupted, and loss of foraging habitat may create additional stress on the resident populations, requiring longer travels to suitable foraging sites. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Breeding and nesting areas could be affected if tricolored blackbirds are present in areas such as Elizabeth Lake, which is less than a mile from the alternative. The primary disturbance in this case would be noise and visual obstructions, which at this distance may be relatively low. It is not expected that there would be any construction in open water (nesting) areas. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Western Spadefoot Toad

With the Alternative 2 transmission line, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this alignment due to numerous calls identified as potential western spadefoot toads during several 2009 surveys in San Francisquito Creek (POWER 2010a). These were never confirmed with visual identifications. Tower construction and grading of new or existing access roads would destroy or degrade grassland habitat, particularly along City Highline Motorway north of Drinkwater Flat, while excessive disturbance in streambed crossings may degrade habitat or possibly alter hydrology. Direct injury or mortality from crushing by equipment or vehicles may occur should individuals be present on the road or in the construction area, especially if they or their tadpoles are present in intermittent streams or temporary pools that are crossed by construction vehicles. Because anurans are known to be most active at night, any night construction may also result in crushing of any animals that travel across the road.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that do not contain the characteristics necessary for population sustainability, such as areas that have the substrate to support temporary pools. It may also place increased strain on any individuals that may be present in the relocation area through increased competition for resources, including breeding habitat. If suitable habitat within the area is limited, the carrying capacity may be exceeded and may put additional strain on population growth. To help avoid this to the extent possible, individuals would be relocated with concurrence and guidance from BLM and/or CDFG, if applicable. It is expected that any relocated spadefoots would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

There may be direct or indirect effects to white-tailed kite, expected to have a possibility of occurring on Alternative 2 based on the availability of suitable habitat in areas going through the Antelope Valley, in the Leona Valley, in Drinkwater Flat, and in San Francisquito Creek. Dense-topped trees including oaks and conifers are lined along much of the northern section of San Francisquito Canyon Road, while Drinkwater Flat has an abundance of oak trees and San Francisquito Creek has a large area of dense riparian woodland north of LADWP's Power Plant 2. Trees in these areas could provide nesting or perching opportunities for kites, but are not expected to be removed or trimmed unless in direct conflict with the transmission line configuration, which may be a concern along San Francisquito Canyon Road or in Drinkwater Flat. While aquatic foraging habitat is not expected to be affected by the Project, terrestrial foraging habitat, such as grasslands, meadows, and farmlands, may be lost or degraded as a result of construction. If so, this would reduce the available foraging habitat in the area and may require any local white-tailed kites to move to new foraging sites. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Migratory Birds

In 2008, an avian risk assessment was begun for BRRTP, in which the entire Project area was surveyed and assessed for a number of factors that are believed to indicate higher levels of avian risk (POWER 2011). The more of these factors that were applicable to any given mile of the Project, the higher risk that mile was determined to have to avian species. The avian risk factors that were developed for BRRTP are listed in the Biological Resources Technical Report.

According to these criteria, almost the entire desert portion of the Alternative 2 transmission line is estimated to be a low risk area for bird species. The most common applicable risk factor in this area was high wind speeds; however, several miles would also be within 0.5 mile of recorded wetland data and/or would be between separate habitat usage types. The existing lines in this portion of Alternative 2 transmission line alignment also converge or diverge several times. The portion of the alignment moving south from Elizabeth Lake alternates between low risk (14 miles) and moderate risk (seven miles), with one mile of the alignment determined to be a high risk area for avian species. All risk factors except three—new transmission corridor, the transmission line crossing a reservoir or lake, and a water body with established emergent vegetation within 0.5 mile—are applicable to the Alternative 2 transmission line over at least one mile. These include:

- the line crossing a recorded wetland;
- a wetland being within 0.5 mile of the transmission line;
- a reservoir or lake within 0.5 mile of the transmission line;
- the line crossing through two separate habitat usage types;
- the line crossing a valley or canyon perpendicularly;
- the line crossing perpendicular to prevailing winds;
- the line crossing through an area with wind speeds on average greater than 16.8 mph;
- a line convergence or divergence within 0.5 mile of the transmission line;
- a 40+% slope within 0.5 mile of the transmission line;
- a nearby ridgeline;
- a ridge crossing perpendicular to the line; and
- a valley nearby to the line.

The reasons why these factors increase collision and/or electrocution risk to birds are discussed in Appendix M of the Biological Resources Technical Report. It is expected that collision and electrocution would be the biggest risks to migratory birds from the BRRTP. Presence of construction and/or humans in any particular area may cause birds to avoid specific areas as they move through the Project area, but presence of the transmission line would not otherwise prevent birds from crossing under or over the conductors.

GP-11 would reduce short- and long-term effects to migratory bird species in the BRRTP area and GP-8 would protect local and migratory bird species that may occur, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Special-status Aquatic Wildlife Populations of San Francisquito Creek

The Alternative 2 transmission line would parallel San Francisquito Creek as it crosses through the ANF. As the proposed Alternative 2 alignment crosses from the Antelope Valley into the ANF, the proposed centerline first crosses over the creek just south of the unincorporated community of Green Valley. At this point, the centerline would travel away from the creek at a distance of approximately three miles. It would parallel the creek until it exits the ANF; however, the centerline would maintain at least a two-mile upslope distance from the creek as it continues southwest from Green Valley. This creek provides habitat for five special-status species, including critical habitat for the California red-legged frog, and known occurrence records for the southwestern pond turtle, arroyo chub, Santa Ana sucker, and unarmored threespine stickleback (POWER 2011). All five species, except unarmored threespine stickleback, are extant within the creek; unarmored threespine stickleback is believed to be extirpated within San Francisquito Creek following fires and extensive flooding in 2005 (CDFG 2011). While suitable habitat is present, particularly in areas south of Bee Canyon, no arroyo toads are known to be along this creek, a determination based on species occurrence records and two years of protocol level surveys that were conducted for this Project along this creek (POWER 2011).

A watershed analysis was also conducted for BRRTP (BRRTP Water Resources Technical Report 2011). The purpose of this analysis was not to calculate a precise quantity of sediment delivered to catchments within the study area, but to use the predicted volumes of soil loss to qualitatively compare the erosional effects of each BRRTP Alternative route within the ANF. It is important to note that the predicted rates of erosion do not reflect the amount of sediment that would be transported out of the watersheds; rather, the predicted values are an estimate of erosion that would occur as a result of construction and operation of the BRRTP. In actuality, much of the sediment eroded from construction areas and roads would be redeposited before leaving the watershed. In addition, due to the scale of this analysis, the predicted post-Project erosion values do not reflect implementation of General Practices or mitigation measures and represent a worst-case scenario.

As part of this analysis, a Revised Universal Soil Loss Equation, Version 2 (RUSLE) was selected to predict annual erosion from Project-related ground disturbance. The RUSLE model predicts long-term average soil loss expressed in tons per acre per year. For analysis of erosion resulting from the Project, road construction or improvement of existing roads at least five miles from the ROW were included in this analysis. Once baseline values were estimated, the change in annual erosion rates (tons/acre/year) was estimated for each subwatershed as a result of construction of the transmission line routes for each Alternative (e.g., vegetation clearing related to road construction). Using these results, the increase of erosion from baseline conditions was calculated. The Alternative 2 transmission line would affect three subwatersheds with a combined area of 65,172 acres. Estimated average baseline annual erosion level for these subwatersheds is 43.93 tons/acre/year. With construction of the Alternative 2 transmission line, predicted average annual erosion would be approximately 44.43 tons/acre/year, an increase of 1.18 percent over baseline. Of the three subwatersheds, Elizabeth Lake would have the largest potential increase (1.59 percent) over baseline conditions from construction of the Alternative 2 transmission line. San Francisquito Canyon would have the second largest potential increase (1.18 percent) over baseline. Ground disturbance activities could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation. However, with implementation of mitigation measures HYD-01 and HYD-02 (Table 4.3.3-1), potential impacts resulting from substantial drainage pattern alteration(less than 1% over baseline) is considered less than significant for CEQA.

Access road 5N27 currently crosses the creek just north of where the special-status species are within the creek. To further reduce the modeled less than 1% percent sedimentation increase associated with the Alternative 2 transmission line, LADWP has agreed to not use access road 5N27 during construction of BRRTP. This road was part of the RUSLE analysis, and by not improving or utilizing access road 5N27, potential impacts from sedimentation would be reduced even more, and any potential direct and indirect impacts to species within the San Francisquito Creek would be significantly limited. However, the Bee Canyon access road also crosses San Francisquito Creek and would be used for construction of BRRTP. This road is upstream approximately three linear miles from the closest known occurrence of special-status species (California red-legged frog) that are known to occur within the creek. The RUSLE analysis also included this road, and less than 1% increase of sedimentation is anticipated as a result of improving this existing access road.

The following impact analysis of species within San Francisquito Creek is a worst case scenario analysis. This is based on the modeled less than 1% increase of sedimentation that may potentially impact the aquatic species as a result of construction from BRRTP. Direct impacts from the Alternative 2 transmission line ROW construction are not anticipated due to the two-mile distance to the special-status species within the creek. There may be direct impacts as a result of upgrading the Bee Canyon access road, which is upstream (three miles) from the closest known occurrence of special-status species within the creek. Santa Ana sucker is expected to be unlikely to occur within the Project area and is not analyzed for impacts below.

Arroyo Chub

With the Alternative 2 transmission line, there may be direct or indirect impacts to the arroyo chub, expected to have a possibility of occurring within the proposed Alternative 2 corridor based on its known presence within the Drinkwater and/or Dam Reaches of San Francisquito Creek over the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). However, upstream of this isolated portion, San Francisquito Creek is not known to be perennial until north of Bee Canyon. The area between Bee Canyon and the known population is intermittent and has been observed to be dry most of the year. The ANF Land Management Plan (USFS 2005b) considers this species to be present within San Francisquito Creek, although it is unclear if it is believed or known to be present anywhere in San Francisquito Creek upstream of Forest Road 5N27. Direct impacts to this species could include crushing or disruption of life history during construction by vehicles or equipment in stream crossings at Bee Canyon, should it be present, along with habitat degradation. Project equipment and vehicles could spill vehicular fluids into the water or could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas, such as suitable arroyo chub habitat. Repeated stream crossings may also disrupt or destroy suitable breeding or spawning habitat.

General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

California Red-legged Frog

Based on known locations and protocol survey results of California red-legged frog in the vicinity of the proposed new 230 kV line, direct effects to individual frogs are not expected (POWER 2010). California red-legged frogs are only known to occur within the St. Francis Dam reach of San Francisquito Creek and within critical habitat unit LOS-1 (75 FR 12815 12959), which is several miles downstream of where the transmission line would cross into San Francisquito Canyon and would be separated from the transmission line in Dry Canyon by a steep mountainside. In addition, the morphology of San Francisquito Creek is typical of a semi-arid region where flow is extremely variable and sediment flux is highly episodic. The total long-term coarse sediment yield for the range of flows for San Francisquito Creek was found to be greater than 0.0625 mm (tons/day) (Stillwater Sciences 2009). Therefore, it was determined that the designated critical habitat unit LOS-1 would not be affected by construction or resulting sedimentation.

Based on protocol surveys, potential habitat was found directly under the transmission line in Dry Canyon in an area known as Drinkwater Flat, where there is a perennial section of streambed within coast live oak riparian woodland. The transmission line would cross directly through this area, which could result in habitat loss or degradation depending on exact tower locations and availability of existing access roads. Preconstruction surveys, timing limitations (no construction activity would occur near occupied California red-legged frog habitat from mid-May through the end of August), and avoidance mitigations would further reduce potential impacts to California red-legged frog potentially occurring in the area. Encroachment into this area is not expected except possibly by foot traffic during the final line-stringing phase. Direct injury or mortality could occur during this process if an individual is present and crushed by foot traffic. However, because California red-legged frogs are not restricted to water and are known to pass over land during migration, there could also be inadvertent crushing by equipment along the access road or in the tower construction areas (Bulger et al. 2003, Rathbun and Scott 2010).

Construction of the new 230 kV line could result in indirect adverse impacts to California red-legged frogs. Decreased fertility or inability to breed could occur due to increased stress, unsuitable breeding habitat, or failure to find a mate in new habitat patches. However, California red-legged frogs are not expected to be present or encountered during construction, and the above scenarios are unlikely. Additionally, construction could result in habitat degradation as a result of increased non-native plant species due to plant seeds attaching to vehicle tires or carriages and falling off in streambeds. Dust raised by vehicles or construction of transmission towers or access roads could settle on surrounding vegetation, possibly reducing the effectiveness of individual plants' photosynthetic processes. Habitat degradation may occur after the Project has been constructed due to ongoing maintenance and security patrols, but it is expected that patrols would likely stay on the main access road unless a problem is discovered that requires individual tower access.

Under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing would be installed around any construction sites that are located in areas where red-legged frogs are widely distributed. If any individuals are detected within the construction site, they would be relocated by a qualified and permitted biological monitor. Relocating may result in increased stress to the individual frogs, particularly if suitable habitat such as deep pools or upland dispersal areas within the area are limited. This could also result in exceeding the carrying capacity such that there may be increased competition for available resources such as food, which could put increased strain on the local population. To help avoid this to the extent possible, California red-legged frogs would be relocated with concurrence and guidance from USFWS, CDFG, and/or USFS, as necessary. It is expected that any relocated frogs would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agencies.

Designated critical habitat for the California red-legged frog is within San Francisquito Canyon in an area known as Unit LOS-1 (75 FR 12815 12959). The Project would not cross this area and the access road going through the area, Forest Road 5N27, would not be used during construction. The boundaries of Unit LOS-1 extend to within 0.20 mile of the proposed new 230 kV centerline.

General practices that would reduce short- and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog) (Table 4.3.1-1).

Southwestern Pond Turtle

With the Alternative 2 transmission line, there may be direct or indirect effects to southwestern pond turtle, expected to be present based on numerous identifications by USGS in 2002 (USGS 2003), 2003 (USGS 2004), 2007 (USGS 2007), 2009 (USGS 2010), and 2010 (USGS 2011), an identification by PCR Services (PCR Services 2001), and suitable habitat in the existing corridor, particularly in areas of deep perennial water such as in the St. Francis Dam Reach of San Francisquito Creek or in Drinkwater Flat. Areas where this turtle has been identified by biologists, which are the Drinkwater and St. Francis Dam reaches of San Francisquito Creek, are not expected to be affected by construction activity, as construction would be over a ridge in Dry Canyon and would not use San Francisquito Canyon as access through this portion of the alignment. Habitat loss should be minimal, judging from the location of sections of habitat relative to the location of the proposed ROW. Habitat is present in a perennial oak riparian woodland area of Dry Canyon beginning roughly at the intersection of Forest Roads 5N27 and 6N21; this area is not known to be inhabited by turtles, and no turtles or signs of turtles were observed during any 2008 and 2009 amphibian surveys. This area, additionally, can likely be avoided except by foot traffic during the final line-stringing phase of construction. It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat. While most southwestern pond turtles typically do not move more than 500 meters upland, they have also been known to move up to 5 km if sufficiently stressed for appropriate habitat conditions (Bettelheim 2005). The proposed Alternative 2 alignment is approximately one mile southeast of the previously documented occupied habitat, but it is probably unlikely that turtles would be able to traverse this distance due to the steep ridge in between San Francisquito Canyon and Dry Canyon, where the proposed ROW is located. Should any turtles be present, however, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be subject to predation.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any southwestern pond turtles are detected within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where sufficiently vegetated aquatic habitat, muddy stream bottoms, or basking locations may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, particularly in regards to food and to hiding areas, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, turtles would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated turtles would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Temporary Transmission Line Impacts
A temporary alternative transmission line would be required for construction of Alternative 2 around the vicinity of the unincorporated community of Green Valley to maintain power while the permanent structures are being upgraded to a three-circuit lattice tower. This temporary transmission line would be 7.5 miles long from near LADWP's Power Plant 1 to just north of Johnson Road in the unincorporated community of Elizabeth Lake, and would constitute 4.18 acres of temporary disturbance. The proposed corridor is almost entirely directly adjacent to San Francisquito Canyon Road, and construction would predominantly occur in areas that are already disturbed or developed. Where the temporary transmission line would leave the road, overall habitat quality is estimated to be low; however, no botanical surveys have occurred along this proposed corridor. Some habitat is present to support southwestern willow flycatcher, arroyo toad, California red-legged frog, least Bell's vireo, and unarmored threespine stickleback, but there are no known special-status wildlife occurrences or wildlife corridors in this area. This portion partially falls within the San Andreas Rift Zone Significant Ecological Area (SEA) and the Santa Clara River SEA. It is estimated that 81 trees would require trimming or removal along this route within 28 distinct sections of road. These mostly consist of *Quercus* or *Pinus* species. Twenty-seven of these trees are within NFS boundaries (Table 4.3.1-11).

Direct impacts to special-status plant species may occur in a variety of ways, including the direct removal of plants during the course of construction. Clearing and grading associated with the placement of temporary towers or the grading of access or spur roads may also result in the alteration of soil conditions, including the loss of native seed banks and changes to the topography and drainage of a site such that the capability of the habitat to support special-status species is impaired. Indirect impacts include the creation of conditions that are favorable for the invasion of weedy exotic species that prevent the establishment of desirable vegetation and may adversely affect wildlife. Dust from road travel, grading, or other construction activities may also reduce photosynthetic capacity in plants over time or inhibit reproduction by physically coating reproductive structures or excluding insect pollinators. The GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to biological resources, including rare plant species. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. In addition to the GPs, the following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1). In addition, the BRRTP would comply with all applicable erosion control and water quality requirements.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1(Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds) (Table 4.3.1-1). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2900.

TABLE 4.3.1-11. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH THE TEMPORARY TRANSMISSION LINE

Temporary Transmission Line (500-foot impact corridor)	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
USFS GIS Modeled Wildlife Habitat				
Southwestern willow flycatcher	0.9	0.9	0.0	0.0
Unarmored threespine stickleback	0.1	0.1	0.0	0.0
Arroyo toad	0.8	0.8	0.0	0.0
California red-legged frog	0.7	0.7	0.0	0.0
Least Bell's vireo	0.4	0.4	0.0	0.0
Riparian Conservation Area				
Yes	0.3	0.3	0.0	0.0
Vegetation				
Agricultural land	0.8	0.8	0.0	0.0
Barren/developed	2.8	2.8	0.0	0.0
Southern mixed chaparral	0.3	0.3	0.0	0.0
Mapped Weed Species on ANF Lands				
Hairy rockrose	0.1	0.1	0.0	0.0
Smilograss	0.1	0.1	0.0	0.0
Common gum cistus	0.1	0.1	0.0	0.0
Spanish broom	0.2	0.2	0.0	0.0
Riparian Community				
Southern sycamore alder riparian woodland	0.2	0.2	0.0	0.0
Biological Protected Area				
San Andreas Rift Zone SEA	0.4	0.4	0.0	0.0
Santa Clara River SEA	0.1	0.1	0.0	0.0

CEQA Significance

With the implementation of the recommended GPs and mitigation measures, direct and indirect Project-specific impacts, described above, to sensitive species and habitats would be reduced to less than significant levels. The mitigation measures protect burrowing owls, migratory birds, desert tortoise, and the other special-status species identified with the potential to occur within Alternative 2. Implementation of the Proposed Action would result in the direct and permanent loss of both common and special-status plant communities. The spread of existing invasive populations or establishment of new noxious species in previously undisturbed areas as a result of construction would be considered a substantial disturbance and a significant impact without mitigation. With the implementation of the proposed GPs and Mitigation Measures, potential impacts would be reduced to less than significant. In addition, adequate mitigation would be achieved through the restoration of disturbed areas and acquiring lands to replace functional habitat values. Construction-related effects to common wildlife are typically not considered significant under CEQA.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.
Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

The Alternative 2a 230 kV double-circuit transmission line actions would be consistent with implementing the Alternative 2 transmission line due to their similar alignments. The main difference would be the Green Valley Re-route, which would skirt around the unincorporated community of Green Valley. With the addition of the localized route and associated helicopter mitigation, the Alternative 2a transmission line (77 acres) would have slightly more temporary impacts to vegetation communities when compared to the Alternative 2 transmission line (74 acres). Helicopter Mitigation would be implemented, as described in Chapter 2 of this Final EIS/EIR, in steep areas of the ANF where access is limited. For Alternatives 1 and 2a, implementation would occur at the locations shown on Figure 2-22, Identified Helicopter Mitigation Locations. During final design of the Project, areas other than those shown on Figure 2-22, including on Alternatives 2 and 3, may potentially require helicopter construction of the towers. This determination would generally be made where tower sites have no existing access roads within 300 feet and slopes are greater than 25 percent. Final identification of these tower sites would be determined and agreed upon by USFS, BLM and LADWP. Limited access to the Green Valley Re-route and the steep topography would increase impacts to the southern mixed chaparral and scrub oak vegetation community. However, with the use of helicopter mitigation (HELICOPTER) along the localized route, permanent impacts would be reduced. An additional 2.06 acres of permanent impacts to live oak vegetation communities would occur with the localized route. This would lead to a loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. Installation and development of the proposed transmission line and activities, such as site clearing and grading, construction of access roads and support facilities, and off-road travel during construction, could cause direct injury or mortality to wildlife. The increased public access as a result of increased access roads (estimated 3.6 miles) may result in additional direct (e.g., crushing) or indirect (e.g., loss of habitat) impacts.

The localized route also would parallel or cross several RCAs, including the 66 RCAs on Alternative 2 and an additional 28 that are exclusive to the localized route. All 28 of the separate RCAs could be affected by construction. By avoiding the unincorporated community of Green Valley, permanent impacts to RCAs would increase by 16.7 acres, for a total of 87.6 acres for Alternative 2a (Appendix N of the Biological Resources Technical Report). Helicopter construction would reduce ground disturbance; however, RCAs would still be impacted. With the exception of the Green Valley Re-route, the remainder of the Alternative 2a transmission line would share the same centerline as the Alternative 2 transmission line; therefore, the impacts would be the same. Please refer to Alternative 2 for a detailed discussion of impacts.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.2-12). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impacts to the ROW within any locations that these resources are known to occur. Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect or direct impacts that may occur from construction vehicles or equipment accessing the Project site. Species that were reviewed and considered to be absent or unlikely to occur are not analyzed below. However, these species are analyzed in detail in the Biological Resources Technical Report.

TABLE 4.3.2-12. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH THE ALTERNATIVE 2A 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE 500-FOOT IMPACT CORRIDOR

Alternative 2a Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American badger	12.4	12.4	1.5	1.5
Desert tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo toad	19.4	20.6	3.9	6.0
California red-legged frog	17.4	18.6	3.7	5.7
Least Bell's vireo	22.6	23.8	4.3	6.4
Southwest willow flycatcher	31.9	33.4	6.2	9.5
Unarmored three-spine stickleback	6.5	6.5	1.7	3.2
Non-modeled Wildlife Habitat				
American badger	0.7	0.7	0.1	0.1
Desert tortoise	10.4	10.4	1.3	1.3
Kit fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert tortoise	276.9	276.9	34.1	34.1
Mohave ground squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	57.0	59.6	10.3	15.6

Alternative 2a Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Plant Species on ANF Lands				
Short-joint beavertail	9.1	9.1	1.4	1.8
Slender mariposa lily	13.0	13.0	2.1	3.0
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural land	78.9	78.9	10.3	11.1
California annual grassland	24.4	24.4	3.9	5.3
Chamise chaparral	38.6	39.4	6.9	10.1
Barren/developed	20.5	20.8	4.0	6.6
Interior live oak chaparral	5.2	5.6	1.1	2.1
Joshua tree woodland	34.4	34.4	4.2	4.2
Mojave creosote bush scrub	149.9	149.9	18.5	18.5
Mojave wash scrub	8.3	8.3	1.0	1.0
Riversidian sage scrub	10.1	10.1	1.7	2.4
Scrub oak chaparral	3.1	3.2	0.8	1.5
Southern mixed chaparral	29.1	31.5	6.1	10.8
Mapped Weed Species on ANF Lands				
Blessed thistle	0.7	0.7	0.1	0.1
Cheatgrass	0.7	0.7	0.1	0.1
common gum cistus	0.7	0.7	0.1	0.1
Cretan rockrose	1.3	1.3	0.2	0.2
Indian hedgemustard	10.4	10.4	1.4	1.5
Prickly Russian thistle	2.0	2.0	0.2	0.2
Saltcedar	0.7	0.7	0.1	0.1
Smilograss	2.0	2.0	0.2	0.2
Spanish broom	2.0	2.0	0.2	0.2
Tocalote	3.9	3.9	0.5	0.5
Tree tobacco	1.3	1.3	0.3	0.4
Riparian Community				
Southern coast live oak riparian forest	3.0	3.4	0.6	0.7
Southern riparian scrub	0.7	0.7	0.2	0.3
Southern sycamore alder riparian woodland	1.7	1.7	0.4	0.8
Biological Protected Area				
San Andreas Rift Zone SEA	12.4	12.4	2.7	4.6
Santa Clara River SEA	3.3	3.3	0.9	1.6

Special-Status Plant Impacts

At least 63 special-status (federally and State listed TECP, USFS Sensitive/Watch, CNPS listed) plant species have the potential to occur in areas of suitable habitat within Alternative 2a. Detailed descriptions, habitat preferences, and the known distribution of these species, are presented in Appendix F of the Biological Resources Technical Report. Many of these plant species are ephemeral in nature and include many spring-flowering annuals and herbaceous perennial species that are generally only visible during optimally timed field surveys in years of average rainfall or greater. Field surveys were conducted in 2010 along access roads of the portion of the Alternative 2a alignment that would deviate from the Alternative 2 alignment. Botanical surveys were not conducted along the proposed ROW, as the vegetation was too thick for feasible access.

There are two special-status plant species that are known to occur within the Alternative 2a transmission line impact corridor (Table 4.3.1-12):

- Short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)

In addition to the species listed above, there are 61 other special-status plant species that have the potential to occur within Alternative 2a:

- Alkali mariposa lily (*Calochortus striatus*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Calico monkeyflower (*Mimulus pictus*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- California satintail (*Imperata brevifolia*)
- Chaparral ragwort (*Senecio aphanactis*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Creamy blazing star (*Mentzelia tridentata*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Delicate bluecup (*Githopsis tenella*)
- Desert cymopterus (*Cymopterus deserticola*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Golden violet (*Viola aurea*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Mojave tarplant (*Deinandra mohavensis*)
- Nevin's barberry (*Berberis nevinii*)
- Ocellated lily (*Lilium humboldtii* ssp. *ocellatum*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)

- Peirson's lupine (*Lupinus peirsonii*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Red Rock tarplant (*Deinandra arida*)
- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)
- Ross's pitcher sage (*Lepechinia rossii*)
- Round-leaved filaree (*California macrophylla*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel bedstraw (*Galium grande*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern California black walnut (*Juglans californica*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- Urn-flowered alumroot (*Heuchera elegans*)
- White pygmy-poppy (*Canbya candida*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

For a discussion of the potential direct and indirect impacts to the known populations of slender mariposa lily, short-joint beavertail cactus, and other special-status plants that may be found within Alternative 2a, see above discussion for Alternative 1, as impact types are expected to be the same. During surveys conducted in 2008 and 2010, no special-status plants were identified on Segment 2a, resulting in the transmission lines for Alternatives 2 and 2a having the same number of identified special-status plants. General practices that would reduce short- or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

For a discussion of invasive plant and herbicide use impacts on native vegetation, common wildlife, and special-status plants and wildlife within Alternative 2a, see above discussion for Alternative 2, as impact types and magnitude are expected to be very similar.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2900.

Wildlife Impacts

There are two special-status wildlife species that are known to be present within the Alternative 2a transmission line impact corridor (Table 4.3.1-11):

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

American Badger

There may be direct or indirect construction impacts to American badger, expected to be present based on the identification of active and inactive badger burrows during surveys conducted in and around SCE's Antelope-Pardee Project in the Antelope Valley (LSA 2007a). The American badger occurs along the northern portion of all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to American badger include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Desert Tortoise

The desert tortoise occurs along the northern portion of all action Alternatives. Recorded occurrences in the CNDDB are primarily concentrated in the area south of the Barren Ridge Switching Station that is shared by all Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Because the section of Alternative 2a that is north of the ANF is identical to Alternative 2, the magnitude of construction impacts along Alternative 2a would be the same as those along Alternative 2. Refer to the Alternative 1 section for a full discussion of the potential impacts to this species and to the Alternative 2 section for a discussion of the difference in impact magnitude between these two areas. Construction activities that resulted in direct mortality or the degradation of habitat utilized by this species, if present, would be considered a take of federally and State-listed species as described above and would constitute an impact that would be authorized only through the context of a Biological Opinion issued by the USFWS. General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

No other special-status species were found within the Alternative 2a transmission line 500-foot impact corridor. There are however species that are present, have the potential to occur, or have habitat within one mile of the impact corridor. The Alternative 2a transmission line alignment diverges from the Alternative 2 alignment at South Portal Canyon, following the Tule Ridge area north and east until it reconnects with San Francisquito Canyon at the northern ANF boundary just south of Elizabeth Lake. Because these two alignments parallel each other for most of the Project, many of the special-status species have the same potential to occur on both Alternatives 2 and 2a. There are no species that are deemed unlikely to occur or absent on Alternative 2 that are deemed to be possible or likely to occur or present on the diverged portion of Alternative 2a. Therefore, both Alternatives have the same list of species that are possible or likely to occur, or present. These species include:

- Arroyo chub (*Gila orcuttii*)
- Burrowing owl (*Athene cunicularia*)
- California condor (*Gymnogyps californianus*)
- California red-legged frog (*Rana draytonii*)
- California spotted owl (*Strix occidentalis occidentalis*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)
- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Golden eagle (*Aquila chrysaetos*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Mountain plover (*Charadrius montanus*)
- Pallid bat (*Antrozous pallidus*)
- Peregrine falcon (*Falco peregrinus*)
- San Bernardino ringneck snake (*Diadophis punctatus modestus*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Swainson's hawk (*Buteo swainsoni*)
- Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Tricolored blackbird (*Agelaius tricolor*)

- Two-striped garter snake (*Thamnophis hammondii*)
- Western red bat (*Lasiurus blossevillii*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- White-tailed kite (*Elanus leucurus*)

Burrowing Owl

With the Alternative 2a transmission line, there may be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on the presence of suitable habitat and known occurrences of this species and its burrows in the Antelope Valley. Because owl burrows and live owls have been detected throughout the vicinity of the Project area (LSA 2007b, CDFG 2011), including all four action Alternatives, impacts to this species would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

California Condor

There may be direct or indirect impacts to California condor associated with implementation of the Alternative 2a transmission line. This species is expected to have a possibility of occurring based on GIS data supplied by USFWS that shows condor presence particularly around the San Gabriel and Santa Susana Mountains on the southern end of the Project (USFWS 2008, USFWS 2009). Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1). Formal consultation is being conducted with the USFWS to determine if any additional measures other than those mentioned above are necessary to protect California condors.

California Spotted Owl

With the Alternative 2a transmission line, there may be direct or indirect effects to California spotted owl, expected to have a possibility of occurring due to availability of suitable habitat in San Francisquito Canyon, South Portal Canyon, Clearwater Canyon, Grass Mountain, Pettinger

Canyon, Spunky Canyon, Baird Canyon, and Craig Spring as determined during 2008 and 2009 surveys (POWER 2009b, POWER 2010d). Because much of the Alternative 2a transmission line alignment is the same as the Alternative 2 alignment, the potential effects to this species would, in most cases, be the same. Refer to the Alternative 2 discussion of this species for a full description of potential effects within their shared corridors. If woodland areas need to be crossed, branch trimming would likely be required to allow equipment to pass. This could lead to injury or mortality of any spotted owls that may be present in the affected trees. Habitat loss and/or degradation may also make suitable California spotted owl habitat less attractive for future use by this species, potentially requiring individuals to find and/or utilize new habitat patches. During spotted owl surveys conducted for BRRTP, suitable habitat was along the southernmost 1.75 miles of South Portal Canyon. The new transmission line would be 0.25 mile from the bottom of the main canyon at its closest point and 0.55 mile at its farthest point. Along with the potential for any birds that may be present to be affected by the construction noise, there is also the potential for runoff from the construction to wash down side drainages and into the main South Portal Canyon streambed, particularly following heavy rain events. This would degrade habitat and potentially stress individual birds that may be present in the canyon. Direct habitat loss would depend on the potential for any direct access into South Portal Canyon, which is not expected because the proposed corridor in this area runs alongside the top of Tule Ridge for most of its course. Construction during nesting season may cause owls to leave the area entirely if they become too distressed by the activity, which could in turn lead to harm if owls are pushed into areas that are unfamiliar or unsuitable for them. Dust would likely be a factor from construction, and would, without proper use of a water truck or equivalent mechanism, have the potential to drift onto adjacent vegetation, degrading its quality.

General practices that would reduce short- or long-term effects to California spotted owl include GP-8, GP-24, GP-25, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to California spotted owl include AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-19 (Protect California spotted owl) (Table 4.3.1-1).

Coast Horned Lizard

With the Alternative 2a transmission line, there would be direct or indirect effects to coast horned lizard, expected to be present within one mile of the transmission line due to numerous sightings within San Francisquito Canyon by POWER biologists in 2009, including several near Fire Camp 14 and another near South Portal Canyon, as well as numerous sightings in the corridor vicinity along Tule Ridge by POWER biologists in 2010. Coast horned lizards have been identified in the vicinity of the ROW on both Alternatives 1 and 2a, and are expected to be present on both Alternatives in the vicinities of the existing transmission lines. Therefore, impacts to this species (described under Alternative 1) would be consistent within both Alternatives. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities),BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal Rosy Boa, San Bernardino Ringneck Snake, and Two-striped Garter Snake

With the Alternative 2a transmission line, there may be direct or indirect effects to San Bernardino ringneck snake, coastal rosy boa, or two-striped garter snake. San Bernardino ringneck snake is expected to have a possibility to occur based on availability of suitable rocky habitat, particularly along the western side of San Francisquito Canyon, and aquatic habitat in San Francisquito Creek. Coastal rosy boa is expected to be present due to a sighting of an individual by a POWER biologist in 2009 near LADWP's Power Plant 1, while two-striped garter snake is expected to be likely to occur based on several perennial water stretches in San Francisquito Canyon (between South Portal Canyon and Bee Canyon and in the St. Francis Dam Reach of San Francisquito Creek) and Dry Canyon (Drinkwater Flat). Because much of the Alternative 2a transmission line alignment is the same as the Alternative 2 alignment, the potential effects to these species would, in most cases, be the same. Refer to the Alternative 2 discussion of these species for a full description of potential effects within their shared corridors. Two-striped garter snake and San Bernardino ringneck snake, which are highly dependent on water or cool, damp areas, are unlikely to be affected by construction of Alternative 2a on the ridge above South Portal Canyon (Bartlett and Bartlett 2009). Coastal rosy boa, while also using riparian habitat, will also more readily move away from water and may be found in burrows or under rocks or other cover. Effects to any of these species, should they occur, are not expected to be different from those that could occur along the rest of the Alternative 2a transmission line. General Practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found.

General practices that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to San Bernardino ringneck snake, coastal rosy boa, and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Desert Kit Fox

With the Alternative 2a transmission line, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs and habitat identified by

POWER during 2008 desert habitat surveys in the Mojave Desert, including skeletal remains (POWER 2011). The desert kit fox sign occurred along the northern portion of all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Golden Eagle, Peregrine Falcon, and Swainson's Hawk
With the Alternative 2a transmission line, there may be direct or indirect effects to golden eagle, Swainson's hawk, or peregrine falcon. Golden eagle is expected to be present in the general area due to multiple sightings in the project area for the Alta-Oak Creek Mojave Project (Kern County 2009). Swainson's hawk and peregrine falcon are both expected to have a possibility of occurring on this alignment due to available water sources in San Francisquito Creek and Drinkwater Reservoir (when full), and available nesting habitat on the ledges and boulders along the western edge of San Francisquito Canyon. Swainson's hawks were also identified by POWER biologists directly above the Alternative 2a transmission line alignment in 2009 just north of the ANF border at Haskell Canyon, but these were deemed to be most likely migrants. These species are not likely to occur on the portion of the Alternative 2a transmission line that would diverge from the Alternative 2 alignment, and thus the potential impacts are expected to be the same for both Alternatives, based on their identical corridors outside of this area. Refer to the Alternative 2 discussion for a full description of these effects. General practices that would reduce short- or long-term effects to golden eagle, Swainson's hawk, and peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to golden eagle, Swainson's hawk, and peregrine falcon include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to Raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Grasshopper Sparrow
There may be direct or indirect effects to grasshopper sparrow, expected to have a possibility of occurring on Alternative 2a due to availability of suitable habitat in locations such as Leona Valley and along the proposed ROW south of Bee Canyon. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper

sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Le Conte's Thrasher

There may be direct or indirect effects to Le Conte's thrasher, expected to be present on Alternative 2a based on multiple recorded occurrences from 2005 within 3.5 miles of the proposed ROW in the Antelope Valley (CDFG 2011), including one occurrence within one mile. These are the same occurrences that are close to Alternative 1. This species was also documented on five different occasions in the upper desert portions of the Project area during fall 2010 and spring 2011 bird use count surveys conducted by POWER biologists. All five detections occurred in areas along the proposed Alternative 2a transmission line ROW. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Least Bell's Vireo, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo

There may be direct or indirect effects to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, as they are expected to have a possibility of occurring based on availability of suitable habitat in South Portal Canyon and potential habitat along the Alternative 2a transmission line in San Francisquito Canyon north of the northern terminus of the old San Francisquito Road as determined during 2008 surveys (POWER 2011). Because much of the Alternative 2a area is the same as Alternative 2, the potential effects to these species would, in most cases, be the same. Refer to the Alternative 2 discussion of these species for a full description of potential effects within their shared corridors. However, for the portion of the Alternative 2a transmission line that diverges from the Alternative 2 transmission line alignment, specifically where there is suitable habitat for these species along approximately the southernmost 1.75 miles of the diversion, effects may be different due to the lack of existing towers in this area. The new transmission line would be 0.25 mile from the bottom of the main canyon at its closest point and 0.55 mile at its farthest point. Along with the potential for any birds that may be present to be affected by the construction noise, there is also the potential for runoff from the construction to wash down side drainages and into the main South Portal Canyon streambed, particularly following heavy rain events. This would degrade habitat and potentially stress individual birds that may be present in the canyon. Direct habitat loss would depend on the potential for any direct access into South Portal Canyon, which is not expected because the proposed corridor in this area runs alongside the top of Tule Ridge for most of its course. Impacts to riparian habitat occupied during the breeding season by the endangered least Bell's vireo and southwestern willow flycatcher would constitute a take under ESA, as well as under CESA for the vireo only. Impacts to these listed species would require formal consultations with the federal and State resource agencies. Impacts to riparian bird species are avoidable by limiting construction within riparian habitats to periods outside the breeding season for riparian-dependent species.

General practices that would reduce short- or long-term effects to these bird species and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat) (Table 4.3.1-1).

Loggerhead Shrike

With the Alternative 2a transmission line, there would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys just south of the Barren Ridge Switching Station (POWER 2011). The sighting occurred just south of the Barren Ridge Switching Station, and is thus in an area that is common to all action Alternatives. Therefore, impacts to this species would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Mohave Ground Squirrel, Southern Grasshopper Mouse, Tehachapi Pocket Mouse, and San Diego Black-tailed Jackrabbit

With the Alternative 2a transmission line, there may be direct or indirect construction impacts to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit. These species are not likely to occur on the portion of the Alternative 2a transmission line that would diverge from the Alternative 2 transmission line alignment, and thus the potential impacts are expected to be the same for both Alternatives, based on their identical corridors outside of this area. Refer to the Alternative 2 discussion for a full description of these effects. General practices that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities),BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Mountain Plover

There may be direct or indirect effects to mountain plover, expected to be present on Alternative 2 due to a 2011 recorded sighting one mile from the proposed ROW in the Antelope Valley, as well as the general availability of relatively flat, short grass habitat and agricultural fields in and around the proposed ROW in the Antelope Valley. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to mountain plover include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to mountain plover include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat

With the Alternative 2a transmission line, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are expected to be likely to occur based on the availability of suitable habitat on the Alternative 2a transmission line alignment, such as rocky areas for roosting on the western side of San Francisquito Canyon; water in San Francisquito Canyon, Dry Canyon, South Portal Canyon, and Drinkwater Reservoir; and foraging habitat in the shrubs and grassland throughout the alignment. Because much of the Alternative 2a transmission line alignment is the same as Alternative 2 alignment, the potential effects to these species would, in most cases, be the same. Refer to the Alternative 2 discussion of these species for a full description of potential effects within their shared corridors. There is little suitable habitat directly under the transmission line within the South Portal Canyon area, but there is more abundant habitat for roosting and foraging at the canyon bottom within the streambed area. Because bats are mainly nocturnal, construction on the ridge during the day is unlikely to disturb them. If construction goes into the night, there is a greater likelihood of disturbance, but bats are also unlikely to occur near construction due to the more suitable habitat lower in the canyon or elsewhere along the corridor. General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-

41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities),BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

Tricolored Blackbird
There may be direct or indirect effects to tricolored blackbird, which is expected to be present on Alternative 2a based on comments provided by the LVTC and nesting habitat in areas such as Elizabeth Lake, Lake Hughes, smaller ponds throughout the Leona Valley, and San Francisquito Canyon in the vegetated streambed north of the St. Francis Dam site, and foraging habitat in agricultural areas in the Leona Valley and Antelope Valley. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Western Spadefoot Toad
With the Alternative 2a transmission line, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this alignment due to numerous calls identified as potential western spadefoot toads during several 2009 surveys in San Francisquito Creek (POWER 2010a). These were never confirmed with visual identifications. Because much of the Alternative 2a transmission line alignment is the same as the Alternative 2 alignment, the potential effects to this species would, in most cases, be the same. Refer to the Alternative 2 discussion of this species for a full description of potential effects within their shared corridors. It is unlikely that construction along the Tule Ridge area of the Alternative 2a transmission line would have an effect on this species, due to the lack of habitat in the construction area. General practices that would reduce short- and long-term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker

Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

There may be direct or indirect effects to white-tailed kite, expected to have a possibility of occurring on Alternative 2a based on the availability of suitable habitat in areas going through the Antelope Valley, in the Leona Valley, in Drinkwater Flat, and in San Francisquito Creek. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Migratory Birds

In 2008, an avian risk assessment was begun for BRRTP, in which the entire Project area was surveyed and assessed for a number of factors that are believed to indicate higher levels of avian risk (POWER 2011). The more of these factors that were applicable to any given mile of the Project, the higher risk that mile was determined to have to avian species. The avian risk factors that were developed for BRRTP are listed in Appendix M of the Biological Resources Technical Report.

According to these criteria, almost the entire desert portion of the Alternative 2a transmission line is estimated to be a low risk area for bird species. The most common applicable risk factor in this area was high wind speeds; however, several miles would also be within 0.5 mile of recorded wetland data and/or would be between separate habitat usage types. The existing lines in this portion of the Alternative 2a alignment also converge or diverge several times. The portion of the Alternative 2a alignment moving south from Elizabeth Lake alternates between low risk (14 miles) and moderate risk (seven miles), with one mile of the alignment determined to be a high-risk area for avian species. All risk factors except three—new transmission corridor, the transmission line crossing a reservoir or lake, and a water body with established emergent vegetation within 0.5 mile—are applicable to this alignment over at least one mile. These include:

- the line crossing a recorded wetland;
- a wetland being within 0.5 mile of the transmission line;
- a reservoir or lake within 0.5 mile of the transmission line;
- the line crossing through two separate habitat usage types;
- the line crossing a valley or canyon perpendicularly;
- the line crossing perpendicular to prevailing winds;
- the line crossing through an area with wind speeds on average greater than 16.8 mph;
- a line convergence or divergence within 0.5 mile of the transmission line;
- a 40+% slope within 0.5 mile of the transmission line;

- a nearby ridgeline;
- a ridge crossing perpendicular to the line; and
- a valley nearby to the line.

It is expected that collision and electrocution would be the biggest risks to migratory birds from the BRRTP. Presence of construction and/or humans in any particular area may cause birds to avoid specific areas as they move through the Project area, but presence of the transmission line would not otherwise prevent birds from crossing under or over the conductors.

GP-11 would reduce short- and long-term effects to migratory bird species in the BRRTP area and GP-8 would protect local and migratory bird species that may occur, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Special-status Aquatic Wildlife Populations of San Francisquito Creek
Refer to the Alternative 2 discussion for a description of San Francisquito Creek and the applicable watershed analysis that was conducted for this area (BRRTP Water Resources Technical Report 2011).

Arroyo Chub
With the Alternative 2a transmission line, there may be direct or indirect effects to arroyo chub, expected to have a possibility of occurring based on its known presence within the Drinkwater and/or Dam Reaches of San Francisquito Creek over the last decade (USGS 2002, USGS 2003, USGS 2004, USGS 2005a, USGS 2005b, USGS 2007, USGS 2008, USGS 2010, USGS 2011). This species is expected to be absent on the portion of the Alternative 2a transmission line alignment that diverges from the Alternative 2 alignment, due to lack of suitable habitat and lack of known occurrences, and thus the potential impacts are expected to be the same for both Alternatives based on their identical corridors outside of this area. Refer to the Alternative 2 discussion for a full description of these effects. General practices that would reduce short-term and long-term effects to arroyo chub and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo chub and its habitat include HYD-01 (Use of Existing Water Crossings), HYD-02 (New Road Construction Over Waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program).

California Red-legged Frog
Based on known locations and protocol survey results of California red-legged frog in the vicinity of the proposed new 230 kV line, direct effects to individual frogs are not expected, although indirect effects could be possible (POWER 2011). California red-legged frogs are only known to occur within the St. Francis Dam reach of San Francisquito Creek and within critical habitat unit LOS-1 (75 FR 12815 12959), which is several miles downstream of where the transmission line would cross into San Francisquito Canyon and would be separated from the

transmission line in Dry Canyon by a steep mountainside. This species is expected to be absent on the portion of the Alternative 2a transmission line alignment that diverges from the Alternative 2 alignment, due to lack of suitable habitat, and thus the potential impacts are expected to be the same for both Alternatives based on their identical corridors outside of this area. Refer to the Alternative 2 discussion for a full description of these effects. General practices that would reduce short- and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog) (Table 4.3.1-1).

Southwestern Pond Turtle

With the Alternative 2a transmission line, there may be direct or indirect effects to southwestern pond turtle, expected to be present based on numerous identifications by USGS in 2002 (USGS 2003), 2003 (USGS 2004), 2007 (USGS 2007), 2009 (USGS 2010), and 2010 (USGS 2011)), an identification by PCR Services (PCR Services 2001), and suitable habitat in the existing corridor, particularly in areas of deep perennial water such as in the St. Francis Dam Reach of San Francisquito Creek or in Drinkwater Flat. This species is expected to be absent on the portion of the Alternative 2a transmission line alignment that diverges from the Alternative 2 alignment, due to lack of suitable habitat, and thus the potential impacts are expected to be the same for both Alternatives based on their identical corridors outside of this area. Refer to the Alternative 2 discussion for a full description of these effects. General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

CEQA Significance

Direct and indirect Project-specific impacts on Alternative 2a, described above, to sensitive species and habitat would be reduced to less than significant levels with the implementation of the recommended GPs and mitigation measures. The mitigation measures protect burrowing owls, migratory birds, desert tortoise, and the other special-status species identified with the potential to occur within Alternative 2a. Implementation of Alternative 2a would result in the direct and permanent loss of both common and special-status plant communities. The spread of existing invasive populations or establishment of new noxious species in previously undisturbed areas as a result of construction would be considered a substantial disturbance and a significant impact without mitigation. With the implementation of the proposed GPs and Mitigation Measures, potential impacts would be reduced to less than significant. In addition, adequate mitigation would be achieved through the restoration of disturbed areas and acquiring lands to replace functional habitat values. Construction-related effects to common wildlife are typically not considered significant under CEQA.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Implementation of the proposed Project would require construction to occur within a broad array of habitat types. The Alternative 3 230 kV double-circuit transmission line could permanently impact 91 to 135 acres and temporarily impact 512 to 520 acres of vegetation, including four acres of permanent disturbance to Joshua Trees (Table 4.3.1-12). A total of 69 acres would be private land, and a little under one mile of new access roads would need to be built. The Alternative 3 transmission line would cross ANF lands for a small distance (two miles). Therefore, direct impacts to RCAs would be minimal. Although the proposed centerline would avoid RCAs, access roads would parallel or cross six RCAs, five of which would be affected under conventional construction. Measures would be implemented to reduce impacts to RCAs. The most significant biological resource difference between Alternative 3 and the other action Alternatives is that the Alternative 3 transmission line corridor would permanently impact 4.7 acres of riparian vegetation while the transmission line corridors for Alternatives 1, 2, and 2a would permanently impact 3.2, 2.9, and 2.9 acres, respectively.

The Alternative 3 transmission line would also parallel the Santa Monica Conservancy's Mountains Conservation Property. This property provides habitat for a variety of protected species including, but not limited to, the mountain lion, American badger, and California spotted owl. This land serves as a transition between coastal and desert ranges. The property does not allow access to the public, thereby limiting disturbance to the species and habitat that are present within the property. The Alternative 3 transmission line would bisect through the middle of this property, impacting species through access roads and increased human activity for construction and maintenance activities. However, there are currently several power lines that bisect this area, so the amount of ground disturbance required would likely be minimal depending on final engineering and tower locations, and the increased maintenance activities would not likely be a substantial change from current conditions.

The South Coast Missing Linkages project has also developed a comprehensive plan for maintaining and restoring critical habitat linkages between existing reserves (South Coast Wildlands 2008). The linkage along the Alternative 3 transmission line alignment serves to connect the San Gabriel and Castaic ranges. The Santa Clara River provides breeding sites and traveling routes for a variety of wildlife, and supports other critical natural processes, such as natural flood control, recharge of groundwater basin, and nutrient cycling (South Coast Wildlands 2008). State Route 14 and Sierra Highway are major transportation routes and pose the greatest barriers to wildlife movement between the northern and southern section of the ANF. Therefore, the South Coast Missing Linkages has identified routes for species to migrate from the ANF north of State Route 14 through the Mountains Conservation Property to the ANF south of State Route 14. Dispersal of wildlife could occur due to construction noise, ground vibrations, general construction presence, or loss of habitat. Indirect injury or mortality could be caused by leaving microtrash on-site, such that wildlife may attempt to eat it or feed it to their young, as is the case with the federal Endangered California condor. Avian collisions and electrocutions could occur through poor placement of transmission towers and by neglecting to put bird guards onto transmission lines, respectively.

Biological resources were reviewed for the entire BRRTP area. Species or species habitat that were within 500 feet (250 feet on either of the centerline) were analyzed in detail for direct and indirect impacts to the species or habitat (Table 4.3.1-13). The following acreage numbers were developed from the ground disturbance model (refer to Table 2-24 in Chapter 2). The model incorporates field data and GIS data to generate an acreage of potential disturbance for biological resources that are within the ROW. Biological resources outside the ROW are also discussed below but acreage calculations are only for resources that fall within the ROW. The acreage numbers are cumulative approximations of the overall impacts to the ROW within any locations that these resources are known to occur. Species or species habitat within one mile of the Project components were also analyzed below to review potential indirect or direct impacts that may occur from construction vehicles or equipment accessing the Project site. Species considered to be absent or unlikely to occur were not included in the analysis below. However, these species are analyzed in detail in the Biological Resources Technical Report.

TABLE 4.3.1-13. POTENTIAL BIOLOGICAL IMPACTS ASSOCIATED WITH THE ALTERNATIVE 3 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE WITHIN 500-FOOT IMPACT CORRIDOR

Alternative 3 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Known Special-Status Wildlife Present				
American badger	12.4	12.4	1.5	1.5
Desert tortoise	24.1	24.1	3.0	3.0
USFS GIS Modeled Wildlife Habitat				
Arroyo toad	6.5	6.5	1.7	3.4
California red-legged frog	5.9	5.9	1.5	2.9

Alternative 3 Transmission Line	Minimum Temporary Disturbance (Ac)	Maximum Temporary Disturbance (Ac)	Minimum Permanent Disturbance (Ac)	Maximum Permanent Disturbance (Ac)
Least Bell's vireo	7.2	7.2	1.9	3.5
Southwest willow flycatcher	7.8	7.8	2.0	3.8
Unarmored three-spine stickleback	1.3	1.3	0.3	0.6
Non-modeled Wildlife Habitat				
American badger	0.7	0.7	0.1	0.1
Desert tortoise	10.4	10.4	1.3	1.3
Kit fox	6.5	6.5	0.8	0.8
Wildlife Range				
Desert tortoise	294.5	294.5	38.3	41.8
Mohave ground squirrel	83.9	83.9	10.3	10.3
Riparian Conservation Area				
Yes	3.3	3.3	0.9	1.6
Wildlife Corridor				
Yes	44.9	44.9	11.5	21.4
Known Special-Status Plant Species on ANF lands				
Short-joint beavertail	3.8	5.0	1.1	1.7
Slender mariposa lily	10.3	11.5	2.8	4.9
Joshua Trees Present				
Yes	85.8	85.8	10.6	10.6
Vegetation				
Agricultural land	66.5	66.5	8.2	8.2
California annual grassland	58.6	58.6	11.4	18.4
Chamise chaparral	11.5	11.5	2.9	5.4
Barren/developed	20.6	20.6	4.6	7.9
Joshua tree woodland	34.4	34.4	4.2	4.2
Mojave creosote bush scrub	149.9	149.9	18.5	18.5
Mojave wash scrub	8.3	8.3	1.0	1.0
Riversidian sage scrub	100.0	107.0	24.6	42.7
Scrub oak chaparral	35.6	36.8	9.3	17.0
Southern mixed chaparral	19.5	19.5	4.7	8.5
Mapped Weed Species on ANF lands				
Indian hedgemustard	0.7	0.7	0.1	0.1
Riparian Communities				
Southern riparian scrub	6.3	6.3	1.5	2.8
Southern sycamore alder riparian woodland	1.9	1.9	0.5	0.9
Biological Protected Area				
San Andreas Rift Zone SEA	28.0	28.0	6.7	12.1

Impacts to Native Vegetation

While LADWP intends to avoid native plant communities to the maximum extent possible and would flag resources for avoidance, construction of the Alternative 3 transmission line would still result in disturbance to a variety of native plant communities. See Impacts to Native Vegetation under Alternative 1 above for discussion of permanent versus temporary impacts and expected direct and indirect effects to native vegetation for Alternative 3.

In total, the Alternative 3 transmission line would permanently disturb a maximum of approximately 3.7 acres of vegetation identified as rare and worthy of consideration by the CDFG (131.7 acres of non-rare vegetation) and would temporarily impact a maximum of approximately 8.3 acres of rare vegetation (512.9 acres of non-rare vegetation). Types of California vegetation that are considered to be rare and worthy of consideration can be found in CDFG's "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database" (CDFG 2003). Additional acreages of land disturbance may occur, but the vegetation communities impacted are unknown at this time, as final engineering has not been conducted. Table 4.3.1-12 presents the approximate temporary and permanent impacts to vegetation communities that would occur from implementation of the Alternative 3 transmission line within all jurisdictions that occur in the corridor.

Ongoing operations and maintenance impacts would occur during routine inspection and maintenance of the Project facilities, or as a result of facilitated public access for the life of the Project. These impacts would include trampling or crushing of native vegetation by vehicular or foot traffic, alterations in topography and hydrology, increased erosion and sedimentation, habitat fragmentation, interruptions of avian flyways, decreases in wildlife food sources and habitat, and the introduction of non-native, invasive plants due to increased human presence.

LADWP has indicated that GPs, described in Table 2-15 of Chapter 2 of this Final EIS/EIR, would be implemented as part of the proposed Project to avoid or minimize impacts to native vegetation. These GPs include avoiding or compensating for impacts to unique vegetation communities, training personnel, restricting work to within predetermined limits of construction, implementing erosion BMPs, construction monitoring, flagging vegetation for avoidance, and revegetation with appropriate seed mixes. As proposed, the GPs do not provide mitigation ratios, do not specify time for the habitat restoration monitoring, state that only the Regulatory Agencies must be consulted on various issues, and do not specify what elements would be included in a Revegetation Plan. The following mitigation measures are presented to further reduce impacts of the proposed Project on listed plants: AIR-2a (Implement construction fugitive dust control plan), BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Special Status Plant Impacts

At least sixty special-status (federally and State listed TECP, USFS Sensitive/Watch, CNPS listed) plant species have the potential to occur in areas of suitable habitat along the Alternative 3 transmission line. Detailed descriptions, habitat preferences, and the known distribution of these species are presented in Appendix F of the Biological Resources Technical Report. Many of these plant species are ephemeral in nature and include many spring-flowering annuals and herbaceous perennial species that are generally only visible during optimally timed field surveys in years of average rainfall or greater. Field surveys were conducted in 2008, 2009, and 2010 within portions of the proposed Project area, mostly on USFS lands.

There are two special-status plants known to occur within the Alternative 3 transmission line impact corridor (Table 4.3.1-13):

- Short-joint beavertail
- Slender mariposa lily

In addition, there are 58 special-status plant species that have the potential to occur along the Alternative 3 transmission line:

- Alkali mariposa lily (*Calochortus striatus*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)
- Baja navarretia (*Navarretia peninsularis*)
- California androsace (*Androsace elongata* ssp. *acuta*)
- Chaparral ragwort (*Senecio aphanactis*)
- Club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*)
- Davidson's bush-mallow (*Malacothamnus davidsonii*)
- Desert cymopterus (*Cymopterus deserticola*)
- Hall's monardella (*Monardella macrantha* ssp. *hallii*)
- Kusche's sandwort (*Arenaria macradenia* var. *kuschei*)
- Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*)
- Madera leptosiphon (*Leptosiphon serrulatus*)
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)
- Mojave tarplant (*Deinandra mohavensis*)
- Ojai navarretia (*Navarretia ojaiensis*)
- Pale-yellow layia (*Layia heterotricha*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Peirson's morning-glory (*Calystegia peirsonii*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Red Rock tarplant (*Deinandra arida*)
- Barstow woolly sunflower (*Eriophyllum mohavense*)
- Braunton's milk-vetch (*Astragalus brauntonii*)
- Calico monkeyflower (*Mimulus pictus*)
- California satintail (*Imperata brevifolia*)
- Charlotte's phacelia (*Phacelia nashiana*)
- Creamy blazing star (*Mentzelia tridentata*)
- Delicate bluecup (*Githopsis tenella*)
- Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*)
- Kern buckwheat (*Eriogonum kennedyi* var. *pinicola*)
- Laguna Mountains jewel flower (*Streptanthus bernardinus*)
- Lemmon's syntrichopappus (*Syntrichopappus lemmonii*)
- Many-stemmed dudleya (*Dudleya multicaulis*)
- Mojave Indian paintbrush (*Castilleja plagiotoma*)
- Nevin's barberry (*Berberis nevinii*)
- Palmer's grapplinghook (*Harpagonella palmeri*)
- Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)
- Peirson's lupine (*Lupinus peirsonii*)
- Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)
- Rock monardella (*Monardella viridis* ssp. *saxicola*)

- Rock Creek broomrape (*Orobanche valida* ssp. *valida*)
- Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)
- San Gabriel Mountains dudleya (*Dudleya densiflora*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Southern jewel flower (*Streptanthus campestris*)
- Southern tarplant (*Centromadia parryi* ssp. *australis*)
- Thread-leaved brodiaea (*Brodiaea filifolia*)
- White rabbit-tobacco (*Pseudognaphalium leucocephalum*; SYN=*Gnaphalium leucocephalum*)
- Round-leaved filaree (*California macrophylla*)
- San Bernardino aster (*Symphyotrichum defoliatum*)
- San Gabriel bedstraw (*Galium grande*)
- Santa Susana tarplant (*Deinandra minthornii*)
- Southern California black walnut (*Juglans californica*)
- Southern Mountains skullcap (*Scutellaria bolanderi* ssp. *austromontana*)
- Tehachapi buckwheat (*Eriogonum callistum*)
- White pygmy-poppy (*Canbya candida*)
- White-bracted spineflower (*Chorizanthe xanti* var. *leucotheca*)

For a discussion of the potential direct and indirect impacts to the known populations of slender mariposa lily, beavertail cactus, and other special-status plants that may be found along the Alternative 3 transmission line, see above language for Alternative 1, as impact types and magnitude are expected to be the same. In addition, the proposed mitigation measures to reduce the magnitude of impacts can be found under the Alternative 1 discussion. General practices that would reduce short- or long-term effects to special-status plant species or their habitat include GP-24, GP-25 GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat) (Table 4.3.1-1).

Invasive Plant and Herbicide Use Impacts

For a discussion of invasive plant and herbicide use impacts on native vegetation, common wildlife, and special-status plants and wildlife within Alternative 3, see above discussion for Alternative 1, as impact types and magnitude are expected to be very similar.

To reduce Project impacts from the spread or establishment of noxious weeds, LADWP shall implement Mitigation Measures BIO-1 (Provide restoration/ compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds) (Table 4.3.1-1). These mitigation measures would minimize the potential spread of noxious weeds as required by Forest Service Manual 2900.

Wildlife Impacts
There are two special-status wildlife species known to occur within the Alternative 3 impact corridor (Table 4.3.1-13):

- American badger (*Taxidea taxus*)
- Desert tortoise (*Gopherus agassizii*)

American Badger

There may be direct or indirect construction impacts to American badger, expected to be present based on the identification of active and inactive badger burrows during surveys conducted in and around SCE's Antelope-Pardee Project in the Antelope Valley (LSA 2007a). The American badger occurs along the northern portion of the transmission line for all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. Any badgers along the Alternative 3 transmission line may be accustomed to human presence, as this Alternative crosses several roads and houses with a moderate degree of human presence. General practices that would reduce short- or long-term effects to American badger include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to American badger include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Desert Tortoise

The desert tortoise occurs along the northern portion of all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert tortoise include AIR-2a (Implement construction fugitive dust control plan), (HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss) (Table 4.3.1-1).

No other special-status species were found within the Alternative 3 transmission line 500-foot impact corridor. There are, however, species that are present, have the potential to occur, or have habitat within one mile of the impact corridor. These species include:

- Burrowing owl (*Athene cunicularia*)
- California legless lizard (*Anniella pulchra*)
- California condor (*Gymnogyps californianus*)
- Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*)

- Coastal rosy boa (*Lichanura trivirgata roseofusca*)
- Golden eagle (*Aquila chrysaetos*)
- Le Conte's thrasher (*Toxostoma lecontei*)
- Mohave ground squirrel (*Spermophilus mohavensis*)
- Pallid bat (*Antrozous pallidus*)
- Southwestern pond turtle (*Actinemys marmorata pallida*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Two-striped garter snake (*Thamnophis hammondii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western spadefoot toad (*Spea hammondii*)
- Desert kit fox (*Vulpes macrotis arsipus*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mountain plover (*Charadrius montanus*)
- Southern grasshopper mouse (*Onychomys torridus ramona*)
- Swainson's hawk (*Buteo swainsoni*)
- Tricolored blackbird (*Agelaius tricolor*)
- Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)
- Western red bat (*Lasiurus blossevillii*)
- White-tailed kite (*Elanus leucurus*)

Burrowing Owl

With the Alternative 3 transmission line, there may be direct or indirect construction impacts to burrowing owl, expected to be likely to occur based on the presence of suitable habitat and known occurrences of this species and its burrows in the Antelope Valley. Because owl burrows and live owls have been detected throughout the vicinity of the Project area (LSA 2007b, CDFG 2011), including all four Alternatives, impacts to this species would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to burrowing owl include GP-8, GP-23, GP-24, GP-25, GP-34, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to burrowing owl include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-16 (Protect burrowing owl) (Table 4.3.1-1).

California Condor

There may be direct or indirect impacts to California condor associated with implementation of the Alternative 3 transmission line. This species is expected to have a possibility of occurring based on GIS data supplied by USFWS, which shows condor tracking data in the mountains in the southern portion of Alternative 3 (USFWS 2008, USFWS 2009). The transmission line alignments for Alternatives 2 and 3 share the same corridor until approximately six miles south of the Kern/Los Angeles County Line. Both alignments would follow existing transmission lines and would result in similar effects to condors from construction. Refer to the Alternative 2 section for a full discussion of potential effects to this species that could result from the construction of Alternative 3, which would not result in substantially more impacts to this species than Alternative 2 because of similarly low recorded condor activity (USFWS 2008, USFWS 2009), the similarities in alignments (primarily parallel to ridgelines), the presence of existing transmission lines along both Alternatives, and the fact that Alternative 3 is generally more urbanized than Alternative 2, and is bordered along much of its eastern and southern end by development. General practices that would reduce short- or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to California condor include HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor) (Table 4.3.1-1). Formal consultation is being conducted with the USFWS to determine if any additional measures other than those mentioned above are necessary to protect California condors.

Coast Horned Lizard

With the Alternative 3 transmission line, there may be direct or indirect effects to coast horned lizard, expected to be likely to occur due to reported sightings within two miles of the transmission line, primarily close to Elizabeth Lake Road, although one recent occurrence is directly within the corridor in the Sierra Pelona Mountains west of Palmdale (CDFG 2011). Impacts to this species would be the same as those described for Alternative 1 due to similar existing conditions within suitable habitat (e.g., multiple existing transmission line corridors, mountainous and forested terrain) and similar construction operations (e.g., tower construction, road grading). However, the Alternative 3 corridor runs closer to developed areas than much of Alternative 1. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to coast horned lizard include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to coast horned lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Coastal Rosy Boa and Two-striped Garter Snake

With the Alternative 3 transmission line, there may be direct or indirect effects to coastal rosy boa or two-striped garter snake. Coastal rosy boa is expected to be likely to occur due to availability of suitable habitat within the proposed corridor, including intermittent streambeds and rocky habitat along the southern portion of the alternative passing through the Sierra Pelona Mountains and alongside Sierra Highway, while two-striped garter snake is expected to have a possibility of occurring based on several nearby historical occurrences in the vicinity of Elizabeth Lake Road (1995, 1999) coupled with a general lack of suitable aquatic habitat in the corridor vicinity (CDFG 2011). Effects from the construction of the Alternative 3 transmission line would be expected to be similar to those from the Alternative 2 transmission line, due to the similarity of construction methods and the presence of existing transmission lines and disturbance in the area. However, construction near suitable aquatic habitat along the Alternative 3 transmission line may be more stressful to these species, especially two-striped garter snake, than it would be on other alignments. This is because perennial aquatic habitat, which this snake prefers, is relatively uncommon along this alignment. Disturbing snakes that are in the area and causing them to leave areas of suitable habitat, or degrading aquatic habitat, may be particularly stressful to them. Refer to the Alternative 2 section for a full discussion of the potential effects to these species.

General practices and mitigation measures protecting riparian habitat and water quality would help to protect areas where these species, particularly the two-striped garter snake, may be found. General practices that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to coastal rosy boa and two-striped garter snake include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

California Legless Lizard

With the Alternative 3 transmission line, there may be direct or indirect effects to California legless lizard, expected to have a possibility of occurring based on numerous recent reported occurrences within five miles of the corridor around Mint Canyon and in areas south of Palmdale in the Sierra Pelona Mountains and one 15-year old occurrence 0.20 mile from it at Elizabeth Lake Road (CDFG 2011). The older sighting was of a dead individual. There may still be locations along this alignment that could support this species, although there are no other reported occurrences. This species is known to reside in moist areas, and apparently requires high moisture content in the soil it inhabits. Direct injury or mortality of individuals of this species is possible, because it hides under leaf litter and other cover, where it would not be seen. In areas where construction is present in habitat that could support this species or if vehicles pass through areas of suitable habitat, they may crush individuals or compact the soil, resulting in long-term reduced habitat quality for this fossorial species. This would also be a concern because legless lizards are primarily active during the morning and evening (Fellers 2009) and would generally be inactive and basking throughout the day, leaving individuals subject to injury or mortality through construction. Encroachment near riparian areas—or sandy areas, such as that around Vasquez Canyon—would be most likely to carry the risk of injuring or killing individuals of this species, although open chaparral and even desert scrub may be used by this species (Stebbins 2003, Fellers 2009). While it forages in leaf litter during the day, it will emerge at dusk or at night, and night construction may affect its regular activities. Exposure on the surface during the day or by lighting at night may subject it to predation. Habitat loss or degradation could potentially occur where construction or construction access is near riparian areas, chaparral in loose soils, or leaf litter around oak woodlands (Fellers 2009). Because this species tends to occur in moist areas or riparian areas when possible, protecting riparian habitats would benefit it. Furthermore, any excavations that are conducted and left open during the day or overnight would pose a risk to any California legless lizards in the area, which may get trapped in them.

Under mitigation measure BIO-22 (Protect special-status herpetofauna), if any individuals are identified within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas that are not moist enough to support them or do not have suitable microhabitat qualities, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources. If suitable habitat and microhabitat within the area is limited, the carrying capacity may be exceeded and available resources, such as insects for food, may be at higher risk for depletion. To help avoid this to the extent possible, these lizards would be relocated with concurrence and guidance from USFS and/or CDFG, if applicable. It is expected that any relocated lizards would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- or long-term effects to California legless lizard include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to California legless lizard include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Desert Kit Fox

With the Alternative 3, there would be direct or indirect construction impacts to desert kit fox, expected to be likely to occur due to numerous signs and habitat identified by POWER during 2008 desert habitat surveys in the Mojave Desert, including skeletal remains (POWER 2011). The desert kit fox sign occurred along the northern portion of all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 discussion for a full discussion of the potential impacts to this species. General practices that would reduce short- or long-term effects to desert kit fox include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to desert kit fox include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker

Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Golden Eagle and Swainson's Hawk

With the Alternative 3 transmission line, there may be direct or indirect effects to golden eagle or Swainson's hawk. Golden eagle is expected to be present in the general area due to multiple sightings in the project area for the Alta-Oak Creek Mojave Project (Kern County 2009). Swainson's hawk is expected to have a possibility to occur based on the presence of poor-quality grassland in the upper end of the Alternative in the Antelope Valley, nesting habitat on existing towers and some pockets of trees around residences in the Antelope Valley, and presence of the California Aqueduct through the alignment. Construction of new towers and grading of new or existing access roads would result in foraging habitat loss to these species; however, the restoration plan would require restoration and/or compensation for habitats impacted by this Project. Direct injury or mortality to hawks from construction is not expected based on the lack of recorded sightings, but it is possible that golden eagles could suffer collisions or electrocutions from the transmission lines. Power line design could result in injury or mortality to raptors that are flying through the area or even perching on the towers, and appropriate tower design and protective measures would need to be enforced to prevent this. Birds, particularly raptors, are also known to perch, roost, or even nest on transmission structures (APLIC 2006). However, addition of a new transmission line on this alignment is not expected to appreciably increase the risk of collision or electrocution because there are already numerous lines on this alignment culminating at the nearby Antelope Substation. Should any hawks nest near the proposed ROW, they may be displaced by construction disturbance. If this is the case, adults and/or their young would likely need to relocate, which could result in indirect injury or mortality as they move to inhabit new locations. However, implementation of the mitigation measure to protect nesting raptors and migratory birds should minimize this impact by identifying active nests and avoiding construction activities that may negatively impact those nests. Golden eagles are not expected to be nesting in or near this alternative.

General practices that would reduce short- or long-term effects to golden eagle and Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to golden eagle and Swainson's hawk include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Grasshopper Sparrow

There may be direct or indirect effects to grasshopper sparrow, expected to have a possibility of occurring on Alternative 3 due to suitable habitat in the Leona Valley, on the edges of the Sierra Pelona Mountains, and in the hills within Vasquez Canyon. Because this species nests and forages on the ground in dense grassland (CDFG 2008), project construction in areas of dense grassland may have direct impacts on individual birds, including injury, mortality, stress, or disruption of essential activities. Preconstruction surveys for special-status species would help determine if grasshopper sparrow is present in areas of suitable habitat as required by BIO-5

(Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Because this species is only present in the area during the nesting season, if LADWP avoids the nesting season, it is expected that there would be no direct impacts to this species outside of habitat loss and degradation. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds in the grasshopper sparrow's preferred grassland habitat. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to grasshopper sparrow include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Le Conte's Thrasher

There may be direct or indirect effects to Le Conte's thrasher, expected to be present on Alternative 3 based on multiple recorded occurrences from 2005 within 3.5 miles of the proposed ROW in the Antelope Valley (CDFG 2011), including one occurrence within one mile. These are the same occurrences that are close to Alternative 1. This species was also documented on five different occasions in the upper desert portions of the Project area during fall 2010 and spring 2011 bird use count surveys conducted by POWER biologists. All five detections occurred in areas along the proposed Alternative 3 transmission line ROW, and Alternative 3 in this area shares the same corridor with Alternative 2. Potential impacts to this species would be the same as those for Alternative 2; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to Le Conte's thrasher include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Loggerhead Shrike

With the Alternative 3 transmission line, there would be direct or indirect effects to loggerhead shrike, expected to be present due to a sighting during 2008 desert habitat surveys just south of the Barren Ridge Switching Station (POWER 2011). The sighting occurred just south of the Barren Ridge Switching Station, and is thus in an area that is common to all action Alternatives. Therefore, impacts to this species (described under Alternative 1) would be consistent within each action Alternative. Refer to the Alternative 1 section for a full discussion of impacts to this species. General practices that would reduce short- or long-term effects to loggerhead shrike include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to loggerhead shrike include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Mohave Ground Squirrel and Southern Grasshopper Mouse

With the Alternative 3 transmission line, there may be direct or indirect construction impacts to Mohave ground squirrel and southern grasshopper mouse. Mohave ground squirrel is expected to be likely to occur due to availability of habitat, recorded occurrences, and POWER's 2008 desert habitat survey results in the Mojave Desert (POWER 2011, CDFG 2011). Southern grasshopper mouse is expected to have a possibility of occurring, based on availability of suitable habitat in the desert portion of the alternative and in areas around the Sierra Pelona Mountains as well as a historical occurrence (1930) in the Mint Canyon area 0.5 mile from the Alternative 3 transmission line corridor. Because of the similarity of basic construction and of certain locations (the Alternatives 2 and 3 transmission line alignments share the same corridor until approximately six miles south of the Kern/Los Angeles County line), the potential effects on these species from construction of the Alternative 3 transmission line would be expected to be generally the same as those that could occur from construction of the transmission line for Alternative 2. Refer to the Alternative 2 section for a discussion of potential effects to these species. General practices that would reduce short- or long-term effects to Mohave ground squirrel and southern grasshopper mouse include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short- or long-term effects to Mohave ground squirrel and southern grasshopper mouse include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox) (Table 4.3.1-1).

Mountain Plover

There may be direct or indirect effects to mountain plover, expected to be present on Alternative 3 due to a 2011 recorded sighting 0.1 mile from the proposed ROW in the Antelope Valley, as well as the general availability of relatively flat, short grass habitat and agricultural fields in and around the proposed ROW in the Antelope Valley. Potential impacts to this species in this area would be the same as those for Alternative 2, as the same occurrence record applies to both; refer to Alternative 2 for the full discussion. General practices that would reduce short-term or long-term effects to mountain plover include GP-8, GP-23, GP-24, GP-25, GP-34, GP-37, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to mountain plover include BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Pallid Bat, Townsend's Big-eared Bat, Western Mastiff Bat, and Western Red Bat
With the Alternative 3 transmission line, there may be direct or indirect construction impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. All four species are expected to be likely to occur, based on the availability of suitable habitat in the lower Los Angeles County portion of the alignment, such as rocky areas for roosting in the Sierra Pelona Mountains region of the Alternative, along with riparian habitat and chaparral for foraging throughout this same area. Because these bat species all also have the potential to occur on Alternative 1, the potential effects to them as a result of constructing new tower sites and grading and maintaining new or existing access roads would be roughly the same between the two Alternatives. Refer to Alternative 1 for a full discussion of the potential impacts to these species. Because riparian habitat that may be suitable for some of these species is relatively uncommon on this Alternative, any impacts to suitable riparian habitat may have greater effects on these animals than on other Alternatives where riparian habitat is more abundant. General practices that would reduce short- or long-term effects to special-status bat species include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to special-status bat species include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-21 (Protect sensitive bat species) (Table 4.3.1-1).

Southwestern Pond Turtle
With the Alternative 3 transmission line, there may be direct or indirect effects to southwestern pond turtle, expected to have a possibility of occurring due to historical (1990 to 1999) sightings of numerous pond turtles in a pool underneath Elizabeth Lake Road within one mile of the proposed corridor (CDFG 2011). Suitable deep permanent or semi-permanent water that could support this species along the rest of this alignment is relatively uncommon. There is the potential for the aforementioned area to be affected by construction. Construction would cross over the Ritter Ridge area and eventually cross Elizabeth Lake Road. While the actual mapped location in Amargosa Creek is south of Elizabeth Lake Road, the creek crosses the road less than 1.5 miles downstream, and if suitable habitat occurs throughout the area, it is possible that construction runoff from any uphill tower sites could degrade habitat in the creek or adjacent areas or injure individual turtles. The transmission line would span over the creek itself. Actual

habitat loss would likely be minimal due to the general lack of suitable habitat for this species along this Alternative, but habitat loss could occur were the transmission line to be in the vicinity of southwestern pond turtle habitat.

It is possible that turtles may venture into the construction area during their seasonal migrations into or out of wintering habitat or for egg-laying. Should any turtles be present near construction, injury or mortality could occur if they were on land or buried for the winter, depending on construction timing. Any turtles that happen to be pushed into the open by construction would also be open to predation. For this reason, BIO-22 (Protect special-status herpetofauna) would require surveys to be conducted by a qualified biologist before construction in areas of suitable habitat, such as this area. Under this measure, if any southwestern pond turtles are detected within the Project area they may be relocated by a qualified biological monitor. Relocating may result in individuals being placed in areas where sufficiently vegetated aquatic habitat, muddy stream bottoms, or basking locations may be limited, and may place increased strain on any individuals that may be present in the relocation area through increased competition for resources in these areas. If suitable habitat within the area is limited, particularly in regards to food and to hiding areas, the carrying capacity may be exceeded and could put additional strain on the resident and relocated individuals, possibly affecting their ability to survive in that specific area. To help avoid this to the extent possible, turtles would be relocated with concurrence and guidance from USFS, BLM, and/or CDFG, if applicable. It is expected that any relocated turtles would be moved to suitable habitat with similar characteristics in an area as close to the original location as possible while still being outside of the construction zone, or to an area designated by the appropriate agency.

General practices that would reduce short- and long-term effects to southwestern pond turtle include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to southwestern pond turtle include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

Tricolored Blackbird

There may be direct or indirect effects to tricolored blackbird, which is expected to be present on Alternative 3 based on comments provided by the LVTC. The closest occurrence in the CNDDB is approximately five miles to the east at Lake Palmdale (CDFG 2011), but according to the LVTC there are important foraging locations in the corridor vicinity and a historical nesting area approximately two miles east of the alternative off of Elizabeth Lake Road. Foraging habitat and behavior may be directly affected by construction through or close to any prominent foraging grounds such as those mentioned by the LVTC. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), while preconstruction surveys for special-status species would help determine if tricolored blackbird is present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). If birds are present and undetected then their foraging behavior may be disrupted, and loss of foraging habitat may create additional stress on the resident populations, requiring longer travels to suitable foraging sites. Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area, which may leave them open to predation. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Breeding and nesting areas could be affected if tricolored blackbirds are present; however, the closest nesting area is unknown. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds. However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short-term or long-term effects to tricolored blackbird include GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to tricolored blackbird include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/ compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Unarmored Threespine Stickleback

Unarmored threespine stickleback, while not included in the direct construction corridor impacts, is nevertheless known to be present in Bouquet Creek in multiple locations south of Bouquet Reservoir inside and outside of the ANF. There would be direct or indirect construction impacts to unarmored threespine stickleback, expected to be present along the Alternative 3 transmission line alignment due to numerous sightings of fish within Bouquet Creek and its tributaries (CDFG 2011). A potential access point at Esguerra Road would pass directly through Bouquet Creek, which may result in sediment deposition or alteration of stream hydrology through the passing of vehicles and heavy equipment. This crossing would be in an intermittent part of the creek, approximately 80 feet wide; construction may be able to be timed to avoid direct impacts to water quality and any fish in it. Depending on the extent of any introduced sediment or stream impacts, this may result in altered hydrology, decreased water quality and clarity, or injury or mortality of any unarmored threespine stickleback in the creek. Additionally, Project equipment and vehicles could carry non-native plant seeds in their tires or on their carriages, potentially resulting in the spread of non-native plant species if the seeds fall off and propagate in new areas. General practices that would reduce short- or long-term effects to unarmored threespine stickleback or its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program) (Table 4.3.1-1).

Western Spadefoot Toad

With the Alternative 3 transmission line, there may be direct or indirect effects to western spadefoot toad, expected to be likely to occur on this Alternative due to numerous sightings within five miles of the transmission line in the Mint Canyon area and availability of suitable grassland habitat in many areas of this alignment, along with the vernal pool areas on Cruzan Mesa, where there is one reported historical sighting (1993) of this species (CDFG 2011). The potential effects to this species from construction of the Alternative 3 transmission line are expected to be the same as those that could result from construction of the Alternative 2 transmission line. Refer to the Alternative 2 section for a full discussion of the potential effects to this species. General practices that would reduce short- and long- term effects to western spadefoot toad include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24 GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short- or long-term effects to western spadefoot toad include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of existing water crossings), HYD-2 (New road construction over waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna) (Table 4.3.1-1).

White-tailed Kite

scarce along this alignment compared to the other alternatives, and aquatic foraging habitat is also limited except in particular areas, such as the Leona Valley. Terrestrial foraging habitat, such as grasslands, meadows, and farmlands, may be lost or degraded as a result of construction. If so, this would reduce the available foraging habitat in the area and may require any local white-tailed kites to move to new foraging sites. Habitat loss would be mitigated at an appropriate ratio as determined in BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities). Project construction could also disrupt foraging behavior. Preconstruction surveys for special-status species would help determine if white-tailed kites are present in areas of suitable habitat as required by BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife). Individuals in the area may be driven to dispersal by human presence and/or construction noise. If this occurs, it may lead to indirect injury or mortality if individuals are forced to relocate to an unfamiliar area. In addition, construction noise and impacts may result in displacement of individuals into less suitable habitat, which could lead to reduced fitness of individuals. Nesting behavior is not expected to be affected by Project construction. While this species would be present in the area year-round, the bird nesting season would be avoided to the extent possible. Project construction could indirectly result in habitat degradation, particularly through the spread of noxious weeds.

However, LADWP would be required by BIO-2 (Prevent the spread of invasive weeds) to prepare and implement a noxious weed control plan.

General practices that would reduce short- or long-term effects to white-tailed kite include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, GP-49, and GP-56. Mitigation measures that would reduce short- or long-term effects to white-tailed kite include HYD-1 (Use of existing water crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

Migratory Birds

In 2008, an avian risk assessment was begun for BRRTP, in which the entire Project area was surveyed and assessed for a number of factors that are believed to indicate higher levels of avian risk (POWER 2011). The more of these factors that were applicable to any given mile of the Project, the higher risk that mile was determined to have to avian species. The avian risk factors that were developed for BRRTP are listed in Appendix M of the Biological Resources Technical Report.

According to these criteria, the entire shared portion of the Alternatives 2 and 3 transmission line alignments is estimated to be a low-risk area for bird species. The most common applicable risk factor in this area was high wind speeds; however, several miles would also be within 0.5 mile of recorded wetland data and/or would be between separate habitat usage types. The existing lines in this portion of the Alternative 3 transmission line alignment also converge or diverge several times. The portion of the Alternative 3 transmission line alignment that splits from the Alternative 2 alignment alternates between low risk (22 miles) and moderate risk (nine miles), with one mile of the alignment determined to be a high risk area for avian species. All risk factors except three—new transmission corridor, the transmission line crossing between two distinct habitat usage types, and a water body with established emergent vegetation within 0.5 mile—are applicable to this alignment over at least one mile. These include:

- the line crossing a recorded wetland;
- a wetland being within 0.5 mile of the transmission line;
- a reservoir or lake within 0.5 mile of the transmission line;
- the line crossing through two separate habitat usage types;
- the line crossing a valley or canyon perpendicularly;
- the line crossing perpendicular to prevailing winds;
- the line crossing through an area with wind speeds on average greater than 16.8 mph;
- a line convergence or divergence within 0.5 mile of the transmission line;
- a 40+% slope within 0.5 mile of the transmission line;
- a nearby ridgeline;
- a ridge crossing perpendicular to the line; and
- a valley nearby to the line.

It is expected that collision and electrocution would be the biggest risks to migratory birds from the BRRTP. Presence of construction and/or humans in any particular area may cause birds to avoid specific areas as they move through the Project area, but presence of the transmission line would not otherwise prevent birds from crossing under or over the conductors.

GP-11 would reduce short- and long-term effects to migratory bird species in the BRRTP area and GP-8 would protect local and migratory bird species that may occur, while applicable mitigation measures include BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) (Table 4.3.1-1).

CEQA Significance

With the implementation of the recommended GPs and mitigation measures, direct and indirect Project-specific impacts, described above, to sensitive species and habitat would be reduced to less than significant levels. The mitigation measures protect special-status plants, burrowing owls, migratory birds, desert tortoise, and the other special-status species identified with the potential to occur within Alternative 3. Implementation of Alternative 3 would result in the direct and permanent loss of both common and special-status plant communities. The spread of existing invasive populations or establishment of new noxious species in previously undisturbed areas as a result of construction would be considered a substantial disturbance and a significant impact without mitigation. With the implementation of the proposed GPs and Mitigation Measures, potential impacts would be reduced to less than significant. In addition, adequate mitigation would be achieved through the restoration of disturbed areas and acquiring lands to replace functional habitat values. Construction-related effects to common wildlife are typically not considered significant under CEQA.

Comparison of Alternatives

The following table summarizes the potential biological impacts associated with the 230 kV double-circuit transmission line for the four action Alternatives. Project components common to all action Alternatives were not included in the table because their impacts would be the same for each action Alternative. As a result, some information that pertains to all Alternatives as a result of the common components is not included below in the summary of biological impacts, namely that the reconductoring portion of the Proposed Action and Alternatives would impact USFWS-designated habitat for the coastal California Gnatcatcher (*Polioptila californica californica*).

The No Action Alternative, discussed in detail above, was not included in the table. Under the No Action Alternative, impacts associated with on-going operation and maintenance of existing facilities would occur, but none of the impacts associated with the construction or operation of the new 230 kV transmission line or project components common to all action Alternatives would occur.

TABLE 4.3.1-14. BIOLOGICAL RESOURCES COMPARISON SUMMARY TABLE OF IMPACTS ASSOCIATED WITH THE 230 KV DOUBLE-CIRCUIT TRANSMISSION LINE

Issues or Concerns		**New 230 kV Double-Circuit Transmission Line for Each Action Alternative**				**General Comments**
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**	
Duration of Construction (months)						
Jurisdiction Crossed (miles)	*National U.S. Forest Service*	16	13	15.5	4.5	
	Bureau of Land Management	4	4	4	4	
	State Land	3	0	0	0	
	Private	61	44.5	43.5	67.5	
	TOTAL	83.1	60.7	62.5	75.5	Alternative 1 transmission line alignment is considered to be the longest alignment with an additional 22.5 miles of corridor than the Alternative 2 alignment, the shortest alignment.
Ground Disturbance Estimates	*Miles of Transmission Line Requiring New Access Roads*	7.3	0.1	0.1	0.6	Alternative 1 transmission line would include the most miles of transmission line requiring new access roads.
	Temporary (Acres)	576– 599	398 – 399	405 – 409	512-520	Alternative 1 transmission line would create the greatest amount of temporary ground disturbance. Alternative 2 transmission line would create the least amount of ground disturbance.
	Permanent (Acres)	120 – 199	57 – 70	59 – 75	91 – 135	Alternative 1 transmission line would create the greatest amount of permanent ground disturbance. Alternative 2 transmission line would create the least amount of temporary ground disturbance.
Miles of Transmission Line Requiring Helicopter Construction		8.4	0	3.6	0.0	Within the ANF, specific areas of steep terrain and no existing access roads would require the use of helicopters during construction. Helicopters would be used to mitigate impacts associated with ground disturbing construction activities such as access roads and tower assembly.
Fish and Wildlife Resources	*Total Miles Crossed with Known Federal and State ESA Listed Species*	4.2	3.7	3.7	3.7	Alternative 1 transmission line would cross the most miles of known federally listed species.
	Miles Crossed with Known Federal and State ESA Listed Species on BLM Lands	3.1 1.7 BLM (desert tortoise) 1.4 BLM/private (desert tortoise)	3.1 1.7 BLM (desert tortoise) 1.4 BLM/private (desert tortoise)	3.1 1.7 BLM (desert tortoise) 1.4 BLM/private (desert tortoise)	3.1 1.7 BLM (desert tortoise) 1.4 BLM/private (desert tortoise)	Transmission line for all four action Alternatives would cross the same 3.1 miles of desert tortoise (DETO, *Gopherus agassizii*).

Issues or Concerns		**New 230 kV Double-Circuit Transmission Line for Each Action Alternative**				**General Comments**
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**	
	Miles Crossed with Known Federal ESA Listed Species on NFS Lands	0.3 0.1 NFS (California condor) 0.2 NFS/CDFG (California condor)	0.0	0.0	0.0	California condor (CACO, *Gymnogyps californianus*) - Includes GPS collar flight data and does not include specific sighting or occurrence record. Alternative 1 transmission line is the only alignment with flight data in the transmission line corridor, according to provided GPS data.
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private Lands	2.2 0.1 Private (California condor) 0.6 Private (desert tortoise) 1.4 BLM/private (desert tortoise)	2.0 0.6 Private (desert tortoise) 1.4 BLM/private (desert tortoise)	2.0 0.6 Private (desert tortoise) 1.4 BLM/private (desert tortoise)	2.0 0.6 Private (desert tortoise) 1.4 BLM/private (desert tortoise)	DETO, CACO- Includes GPS collar flight data and does not include specific sighting or occurrence record. Alternative 1 transmission line would cross the most miles of known federally and State ESA listed species.
	Miles Crossed with Known USFS Special-Status Animal Species	0.0	0.1 0.1 USFS (coastal rosy boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0	In addition to potential habitat observed on NFS lands, a coastal rosy boa (*Lichanura trivirgata roseofusca*) was observed outside the impact corridor. Numerous sightings of the coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) were observed outside the impact corridor, though home ranges may overlap with the corridor. Alternative 2 transmission line would cross the most miles of known USFS special-status species.
	Miles of Designated USFWS or CDFG Wildlife Habitats	0.0 Reconductoring – 2.9 miles, 176 acres (coastal California gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (coastal California gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (coastal California gnatcatcher)	0.0 Reconductoring– 2.9 miles, 176 acres (coastal California gnatcatcher)	No designated habitat would be crossed within 500 feet of the centerline of the transmission line for any action Alternative.
	Miles of Designated BLM Habitat	0.0	0.0.	0.0	0.0	No West Mojave Plan designated habitat for the DETO and Mohave ground squirrel (*Spermophilus mohavensis*) would be impacted or crossed within 500 feet of the centerline.

Issues or Concerns		New 230 kV Double-Circuit Transmission Line for Each Action Alternative				General Comments
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**	
	Miles of Modeled USFS Habitat	4.4 USFS GIS modeled Habitat for the arroyo toad, southwestern willow flycatcher, and least Bell's vireo	4.9 USFS GIS modeled habitat for the arroyo toad, southwestern willow flycatcher, California red-legged frog, least Bell's vireo, and unarmored threespine stickleback	4.6 USFS GIS modeled habitat for the arroyo toad, southwestern willow flycatcher, California red-legged frog, least Bell's vireo, and unarmored threespine stickleback	1.0 USFS GIS modeled habitat for the arroyo toad, southwestern willow flycatcher, California red-legged frog, least Bell's vireo, and unarmored threespine stickleback	Arroyo toad (*Anaxyrus californicus*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*) *and* California red-legged frog (*Rana draytonii*). All modeled habitat is within the San Francisquito Creek and upland habitat. Alternative 2 transmission line would cross the greatest number of miles of modeled USFS habitat.
	Miles of Avian Risk	H – 6 M – 19 L – 58	H – 1 M – 7 L – 55	H – 1 M – 11 L – 53	H – 1 M – 11 L – 65	Post-survey analysis of field data consisted of applying a series of avian-risk factors to the Project Alternatives. Alternative 1 transmission line would have the most miles of high and medium avian collision risk.
	Miles of Condor Risk	H – 6 M – 33 L – 46	H – 0 M – 10 L – 53	H – 3 M – 9 L – 53	H – 1 M – 25 L – 51	Alternative 1 transmission line would have the most miles of high and medium risks to CACO.
Vegetation	*Miles Crossed with Known Federal and State Threatened, Endangered, Candidate, and Proposed Plant (TECP) Species*	0.0	0.0	0.0	0.0	BRRTP 2008 through 2010 surveys on BLM and NFS lands did not locate TECP species.
	Miles Crossed with Known Federal TECP Plant Species on Private Lands	0.0	0.0	0.0	0.0	BRRTP 2008 through 2010 surveys were only conducted within the existing LADWP transmission line ROW. Access was not granted to survey private land.
	*Miles Crossed with Known USFS Sensitive Plant Species**	1.3 1.2 Short-joint beavertail 0.1 Slender mariposa lily	3.2 1.2 Short-joint beavertail 1.7 Slender mariposa lily 0.3 Slender mariposa lily & short-joint beavertail	3.1 1.1 Short-joint beavertail 1.7 Slender mariposa lily 0.3 Slender mariposa lily & short-joint beavertail	1.2 1.1 Slender mariposa lily 0.1 Slender mariposa lily & short-joint beavertail	Alternative 2 transmission line would have the most miles crossing known USFS sensitive plant species.

Issues or Concerns	New 230 kV Double-Circuit Transmission Line for Each Action Alternative				General Comments
	Alternative 1	Alternative 2 Proposed Action	Alternative 2a[1]	Alternative 3	
Total Acreage of Riparian Vegetation Crossed within the 500-foot Corridor	136 acres	126 acres	119 acres	154 acres	Vegetation crossed includes Mojave wash scrub, southern coast live oak riparian forest, southern cottonwood willow riparian forest, southern sycamore alder riparian woodland, southern riparian scrub, southern willow scrub, and valley oak woodland. Alternative 3 transmission line would cross the most acres of riparian vegetation.
Acreage of Joshua Tree Woodland Crossed within the 500-foot Corridor	334 acres	320 acres	320 acres	320 acres	Acreage was based on GIS vegetation data and verified in the field. Alternative 1 transmission line would cross the greatest acreage of Joshua tree woodland.
Acreage of Riversidian Sage Scrub Crossed	448 acres	92 acres	92 acres	770 acres	Acreage was based on GIS vegetation data. Alternative 3 transmission line crosses the greatest acreage of Riversidian sage scrub.
Number of Riparian Conservation Areas (RCA) crossed (ANF Only)	151	66	94	6	Alternative 1 transmission line would cross the most RCAs, followed by Alternative 2a transmission line. Alternative 3 transmission line would not cross any RCAs;; however, there are six RCAs located along forested roads that would be required for access and that presumably would be crossed by construction vehicles and equipment.
Acres of RCA within 500-foot. Corridor (ANF Only)	99.5 acres	70.9 acres	87.6 acres	0.6 acres	Alternative 1 transmission line would have the most acres of RCAs within the 500-foot corridor.
Miles with Noxious Weeds or Invasive Species Identified within 500-foot Corridor during BRRTP Botanical Surveys	1.4	3.6	2.9	0.1	Alternative 2 transmission line would have the most miles of noxious weeds or invasive species present within the 500-foot corridor as identified during BRRTP 2008-2010 botanical surveys.

* Botanical surveys were conducted within the ROW only where the ROW was safely and easily accessible. The numbers in this category are intended to represent only the areas that were surveyed, and not necessarily the entire alignment.

4.3.2 GEOLOGY, SEISMICITY, SOILS, AND PALEONTOLOGY

Introduction

This section describes effects related to geology, seismicity, soils, mineral resources and paleontology (Earth Resources) that could result from the construction and operation of the Proposed Action or Alternatives. The proposed Alternatives within the Project area were evaluated in regards to potential impacts to Earth Resources and potential geologic and seismic hazards associated with implementation of the Project. The following discussion identifies and analyzes environmental impacts and hazards associated with a range of Project Alternatives, and recommends measures to reduce or avoid adverse impacts and hazards anticipated from Project construction and operation.

The information presented in this section has been derived from the Preliminary Geotechnical Evaluation, the Paleontological Resources Assessment Report, and the Land Use Technical Report (see Volumes III and IV of this Final EIS/EIR). While this section presents findings from these reports, please refer to the reports for more detailed information on Project effects related to Earth Resources.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to earth resources are addressed in this analysis:

- Potential impacts on paleontological and mineralogical resources throughout the Project area, including sedimentary rocks on the Ridge Route Basin and fossils along the Garlock Fault
- Potential for landslides

Impact Assessment Methodology

Environmental impacts can be positive (beneficial) or negative (adverse), as a primary result of an action (direct) or as a secondary result of an action (indirect), and can be permanent or long-lasting (long-term) or temporary and of short duration (short-term). Impacts can vary in degree or magnitude from no change, to slightly discernible change, to a complete change in the environmental condition or system (intensity).

Geology, Seismicity and Soils

Geologic resources that may be affected by construction of the BRRTP include surficial soils that may be subject to erosion, and distinctive geologic features. The assessment of potential impacts was performed through a study of the proposed Alternatives relative to known geologic conditions, features and potential hazards. The Alternatives were plotted on geologic maps, fault maps, Seismic Hazards maps and Earthquake Fault Zone maps to evaluate the potential for impacts. GIS data were utilized for evaluation of soils, geologic units, fault locations, Earthquake Fault Zone locations, anticipated ground shaking levels, liquefaction and earthquake-induced landslide zones (for some parts of the study area), potential soil erosion areas, expansive soils and corrosive soils. Limited field reconnaissance was also performed.

The potential impacts were evaluated using a 500-foot-wide impact corridor. Geologic resources and potential hazards within the impact corridor were analyzed. An Impact Assessment Table was created to evaluate the proposed Alternatives on a 0.1-mile basis to develop an assessment of initial impacts. Recommendations for mitigation have been developed for Project impacts and are presented below. Residual Project impacts based on implementation of mitigation recommendations are presented in the Impact Assessment Table included in Appendix A of the Geotechnical Evaluation.

Mineral Resources

A land use impact assessment model, which includes mineral resources, was created to assess resource sensitivity, resource quantity, and resource quality, as well as predict potential impacts. The combination of the three assessment variables determined the level of impact (high, moderate, low, or no identifiable impact) assigned to each land use category. Once initial impact levels were established along Alternative routes, recommended measures for mitigating or reducing predicted high or moderate impact levels were applied, where feasible. The residual impact represents the impacts remaining after applying the mitigation measures. The results of the impact assessment and mitigation planning process are presented in detail in the Land Use Data Tables in Appendix A of the Land Use Technical Report.

Paleontology

The Proposed Action and Alternatives have been evaluated with respect to their potential impacts on paleontological resources. Paleontological resources that may be affected by the construction of the BRRTP are confined to those geologic rock units consisting of sedimentary rocks of late Mesozoic and Cenozoic age. Impact or ground disturbance has been modeled for the BRRTP using a series of Ground Disturbance Categories (GDC) that include the following:

- GDC 1 – Ground disturbance associated with use of existing improved roads or agricultural land.
- GDC 2 – Ground disturbance associated with use of existing access roads that require improvements.
- GDC 3 – Ground disturbance associated with the construction of new access roads on flat terrain (0-10% slope).
- GDC 4 – Ground disturbance associated with the construction of new access roads on sloping terrain (10-20%).
- GDC 5 – Ground disturbance associated with the construction of new access roads on steep terrain (20-30% slope).
- GDC 6 – Ground disturbance associated with the construction of new access roads on very steep terrain (>30% slope).
- GDC H – Ground disturbance associated with the use of helicopters to supply construction crews and transport tower components.

Direct and Indirect Impacts

The Project area was evaluated in regards to potential impacts to geologic resources and potential geologic and seismic hazards associated with implementation of the Project. Geologic resources that may be directly affected by construction of the BRRTP include surficial soils that may be subject to erosion, and distinctive geologic features. Potential seismic hazards that may affect the proposed BRRTP involve surface fault rupture from active faults that cross the proposed corridors, high levels of ground shaking, liquefaction, and earthquake-induced landslides. Potential geologic hazards that may affect the Project include landslides or mudflows, debris flow deposits, erosion, subsidence, soil settlement, expansive soils, corrosive soils, groundwater, and inundation from dam failure or seiche. Potential indirect impacts to geologic and soils resources may include recreational use of access roads, causing increased erosion and sedimentation; erosion of an access road surface with deposition of eroded materials onto adjacent productive/functioning wetland, riparian, or upland soils; or increased off-road vehicle activity in the Project area due to recreational use of access roads, resulting in degradation to soils in roadless areas.

Mineral resources in the study area that may be impacted include unique geologic features or geologic features of unusual scientific value for study or interpretation that may be disturbed or otherwise adversely affected by the Project and the associated construction activities and known mineral resources that may be rendered inaccessible by construction of the Project.

For paleontological resources, earthwork operations (e.g., mass grading, trenching, and boreholes) that cut into sedimentary rock units containing, or potentially containing, fossils would impact those same fossils as they are unearthed. These excavation-related direct impacts could be beneficial by creating short-term opportunities to recover previously buried and undiscovered fossils. Conversely, these impacts could be adverse by causing the permanent destruction of the same previously buried and undiscovered fossils. Impact magnitude is directly correlated with the scale of the proposed earthwork. For example, large scale mass grading operations to construct the new switching station would create a permanent and complete change to a fossil-bearing stratum (rock layer) that is graded away, while small-scale and localized footing boreholes would create a permanent but slight change to a fossil-bearing stratum that is being bored through. Construction of new access roads has the possibility to create indirect beneficial impacts by increasing access for paleontologists to previously unexplored areas where new fossil discoveries could be made. On the other hand, these same access roads could create indirect adverse impacts by increasing opportunities for unregulated amateur collection of potentially significant paleontological resources.

Significance Criteria

Significance conclusions for individual impacts are not required for compliance with NEPA. Therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided to satisfy CEQA requirements only. Conclusions are made regarding the significance of each identified impact that would result from the construction and operation of the Project. Appropriate criteria have been identified and utilized to make these CEQA significance conclusions. Significance criteria for Earth Resources were derived from previous environmental impact assessments and from Appendix G of the CEQA Guidelines.

Assessment of the significance of potential Project impacts on these resources is based on the sensitivity of individual resource units as well as the Proposed Action and Alternatives.

Sensitivity is defined as a measure of probable adverse response of a resource to direct and indirect impacts associated with the construction, operation and maintenance of project components. Evaluation of sensitivity and impact levels varies for each resource and is explained in the sections below.

Geology, Seismicity and Soils

Sensitivity criteria were used to evaluate the level of impact Project construction and operation would have on geologic resources. Sensitivity levels for potential impacts to geologic resources are categorized as exclusion, high, moderate or low, based upon the following general characteristics:

- High Sensitivity – Areas where there would be substantial geologic impacts due to the construction and operation of a transmission line or switching station. Areas designated as high sensitivity are considered least desirable and should be avoided, if possible, or mitigated to reduce adverse impacts.
- Moderate Sensitivity – Areas where there would be limited geologic impacts due to the construction and operation of a transmission line or switching station. Areas designated as moderate sensitivity are not considered highly desirable, but may be used with mitigation of adverse impacts.
- Low Sensitivity – Areas where there would be slight or no geologic impacts due to the construction and operation of a transmission line or switching station. Areas designated as low sensitivity are more desirable for the siting of project components.

Table 4.3.2-1 presents geologic resource components and their corresponding sensitivity ratings based on the criteria above.

TABLE 4.3.2-1. SENSITIVITY RATINGS FOR GEOLOGIC RESOURCES

RESOURCE COMPONENT	SENSITIVITY RATING	RATIONALE
Soils with Very Severe to Severe Erosion Potential	High	High potential for significant impacts from soil loss due to erosion.
Soils with Moderate Erosion Potential	Moderate	Moderate potential for significant impacts from soil loss due to erosion.
Soils with Slight Erosion Potential	Low	Low potential for significant impacts from soil loss due to erosion.
Geologic Unit Contains Distinctive Geologic Features (Prominent or Unique Outcrops, Scenic Formations, San Andreas Fault Zone, White Tuff Beds)	High	High potential for impacts to distinctive geologic features.
Geologic Unit May Contain Distinctive Geologic Features (Significant Marker Beds, Scenic Formations)	Moderate	Moderate potential for impacts to distinctive geologic features.
Geologic Unit (Alluvium or soil-covered areas) Does Not Contain Distinctive Geologic Features	Low	Low potential for impacts to distinctive geologic features.

According to Appendix G of the CEQA Guidelines, a project is considered to have a significant geologic impact if its implementation would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death, involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.
    - Strong seismic ground shaking.
    - Seismic-related ground failure, including liquefaction.
    - Landslides
- Result in substantial soil erosion or the loss of topsoil.
- Be on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Table 4.3.2-2 presents the impact potential, as defined by CEQA, associated with each of the geologic conditions discussed above, and the corresponding impact level utilized in this study for impact assessment.

TABLE 4.3.2-2. IMPACT LEVELS AND POTENTIAL

Impact Level	CEQA Impact Potential
High	Potentially significant impact.
Moderate	Less than significant with mitigation incorporated.
Low	Less than significant impact.
No	No impact.

Mineral Resources

According to Appendix G of the CEQA Guidelines, a project is considered to have a significant impact on mineral resources if its implementation would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Paleontology

The following sensitivity levels for paleontological resources are rated for individual geologic formations and take into account the relationship between fossils and the geologic formations within which they are found. The sensitivity levels and their general characteristics are described below:

- Maximum Sensitivity – Maximum sensitivity is assigned to geologic formations known to contain paleontological localities with rare, well-preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleobiology and evolutionary history (phylogeny) of animal and plant groups. Generally speaking, highly sensitive formations produce, or have the potential to produce, vertebrate fossil remains.
- Major/Undetermined Sensitivity – Major/undetermined sensitivity is assigned to geologic formations known to contain paleontological localities with moderately well- to poorly-preserved, common elsewhere, or stratigraphically long-ranging fossil material. The major sensitivity category is also applied to geologic formations that are judged to have a strong, but unproven potential for producing important fossil remains.
- Minor Sensitivity – Minor sensitivity is assigned to geologic formations that, based on their relatively youthful age and/or high-energy depositional history, are judged unlikely to produce important fossil remains. Typically, minor sensitivity formations produce poorly-preserved invertebrate fossil remains in low abundance.

For paleontological resources, determination of impact significance considers both the resource sensitivity of an area as well as the level of ground disturbance proposed for that area. These factors are summarized below in Table 4.3.2-3, which categorizes initial impacts as high, moderate or low, based upon the following general characteristics:

- High – A high level of impact to paleontological resources would result if the construction, operation or maintenance of the Project would cause a significant or substantial ground disturbance (GDC 4 and greater) or other adverse change to paleontological resources defined as having maximum sensitivity.
- Moderate – A moderate impact to paleontological resources would result if the construction, operation or maintenance of the Project would potentially cause ground disturbance (GDC 3 or greater) or other adverse change to the condition of paleontological resources defined as having major/undetermined sensitivity. Moderate impacts would also occur where construction, operation or maintenance of the Project would result in minor or minimal ground disturbance (GDCs 2 and 3) or other adverse change at or near paleontological resources defined as maximum sensitivity.
- Low – A low impact to paleontological resources would result if the construction, operation or maintenance of the Project would potentially cause any amount of ground disturbance or adverse changes to paleontological resources that have been defined as having minor sensitivity.
- No Identifiable Impact – No identifiable impact would be indicated where no measurable or suspected adverse impact would occur to any paleontological resources. These include areas that are underlain by igneous or metamorphic rock units.

According to Appendix G of the CEQA Guidelines, a project is considered to have a significant impact if its implementation would:

- Directly or indirectly destroy a unique paleontological resource or site, or geologic feature.

TABLE 4.3.2-3. IMPACT MATRIX COMPARING PALEONTOLOGICAL RESOURCE SENSITIVITY AND GROUND DISTURBANCE

Resource Sensitivity	Ground Disturbance Categories (GDC)						
	1	2	3	4	5	6	H
Maximum	Low	Moderate	Moderate	High	High	High	High
Major/Undetermined	Low	Low	Moderate	Moderate	Moderate	Moderate	Moderate
Minor	*Low*	*Low*	*Low*	*Low*	*Low*	*Low*	*Low*
Zero	No	No	No	No	No	No	No

Mitigation Planning

Geology, Seismicity and Soils

Potential impacts to soil resources and distinctive geologic features, as well as potential geologic and seismic hazards that may affect the BRRTP, may be mitigated by employing sound engineering practices in the planning, design and construction of the new improvements proposed for the Project. This includes the performance of the general and specific techniques discussed below before the design and construction of the BRRTP. Specific mitigation measures are recommended when it is determined that Project design and/or General Practices (GPs) would not fully mitigate an impact. GPs are intended to minimize the potential for significant impacts associated with the Proposed Action and Alternatives and are listed in Chapter 2. Mitigation measures are summarized in Table 4.3.2-4.

Soil Loss/Soil Erosion

Construction of the Proposed Action or Alternatives is anticipated to create the potential for soil erosion during excavation, grading, and trenching activities for access roads, tower sites, pulling and tensioning sites and switching stations. However, with the implementation of prudent site practices during construction, water- and wind-related soil erosion can be limited and managed within construction site boundaries. Examples of these procedures include surface drainage measures for erosion caused by water, such as the use of erosion prevention mats or geofabrics, silt fencing, sandbags and plastic sheeting and temporary drainage devices. Positive surface drainage should be accommodated at Project construction sites to allow surface runoff to flow away from site improvements, slope faces or areas susceptible to erosion. To mitigate wind-related erosion, wetting of soil surfaces and/or covering exposed ground areas and soil stockpiles could be considered during construction operations, as appropriate. The use of tackifiers may be considered to reduce the potential for water- and wind-related soil erosion.

Where deemed appropriate for areas of significant concern, limited access areas, or areas of very steep terrain, other practices could be considered to mitigate erosion. These practices may include avoiding these areas, or utilizing construction practices to reduce impacts. Helicopter access could be utilized where warranted during construction in these areas to reduce ground disturbance by eliminating the need for access road construction. Using specialty foundations systems for towers, such as micropiles or hand-excavated foundations, could be considered to reduce the ground impact related to foundation construction. The need for these practices would be evaluated during the design phase of the Project based on Project improvement site locations. As needed, a Storm Water Pollution Prevention Plan (SWPPP) could be developed for construction sites; the SWPPP would include the use of Best Management Practices (BMPs) for erosion and sedimentation control. The SWPPP would also include specific statements about the required effectiveness of the BMPs, as well as plans for routine inspection and maintenance to ensure that the BMPs continue to function effectively.

During long-term operation of the transmission line improvements, soil erosion can be mitigated through prudent site design and maintenance practices. Design procedures can be performed to reduce soil erosion, such as appropriate surface drainage design of roadways and tower pad areas to provide for positive surface runoff. Design would address reducing concentrated run-off conditions that could cause erosion rilling and affect the stability of Project improvements. The use of erosion control fabrics and roadway drainage devices can be designed and maintained to reduce erosion processes.

Distinctive Geologic Features

Prominent rock features are, by nature, typically harder than the surrounding materials. They are, therefore, more difficult to excavate and present more difficulty in grading of roads, tower sites and pulling and tensioning sites. Project designers and contractors may prefer to avoid these features for ease of construction and in efforts to reduce Project costs. Measures to mitigate the impacts to distinctive geologic features include avoiding the features. Design considerations would include siting of towers, roads, and pulling and tensioning sites away from the geologic feature.

Surface Rupture

Recommendations for mitigation of potential fault rupture hazard include locating transmission system improvements away from the trace of an active fault, designing the conductor system for an acceptable amount of movement, or implementing systems to maintain safety and allow for displacement that could be repaired to restore the system.

Mitigation for potential fault rupture hazard includes the siting of foundations for towers and other structures a safe distance from known surface traces of active faults, within the limits of standard transmission line design (Table 4.3.2-4, GEO-1). Siting improvements a sufficient distance from active faults would limit damage to the system as long as the fault ruptures along the identified surface and does not rupture along a new surface.

Transmission systems throughout California cross active faults. With the prevalence of active faulting in this seismically active region, the crossing of active faults may be unavoidable. In this regard, mitigation of the potential surface fault rupture hazard in some areas of the Alternatives may not involve avoiding the fault, but would involve designing the system for the anticipated displacement to reduce the damage while providing for the safety of the public. Planning for the anticipated displacement by the use of additional slack in the conductor, or placing "dead-end" tower structures on both sides of a fault trace, may reduce damage to the system and non-operational time.

Seismic Ground Shaking

Mitigation of the potential impacts of seismic ground shaking can be achieved through Project design. During the design phase, site-specific geotechnical evaluations would be performed to analyze the ground motion anticipated for the transmission line improvements. Site-specific evaluation of the potential ground shaking hazard would involve evaluation to develop seismic design parameters for use by the Project structural engineer. Structural elements of the transmission line system can then be designed to resist or accommodate appropriate site-specific ground motions and to conform to the current seismic design standards.

Liquefaction

Liquefaction would typically be a potential hazard in parts of the Project area where liquefaction-prone conditions are present (loose granular soils and shallow groundwater), such as stream, valley and canyon bottoms within the study corridors. In these areas of the Project, foundations for towers or other structures can be located to avoid potential liquefaction areas and mapped liquefaction zones, such as moving tower locations upslope from a valley bottom.

Mitigation for construction in liquefaction zones may include in-situ ground modification, removal of liquefiable layers and replacement with compacted fill, or support of Project improvements with piles at depths designed specifically for liquefaction. Pile foundations can be designed for liquefaction hazard by supporting the piles in dense soil or bedrock below the liquefiable zone or other appropriate methods as evaluated during the site-specific evaluation. Additional recommendations for mitigation of potential liquefaction may include densification by installation of stone columns, vibration, deep dynamic compaction, and/or compaction grouting.

Landslides

During the design phase, site-specific geotechnical evaluation would be performed to identify landslide hazards, surficial (shallow) slope failures and debris flow deposits so that, in the event a hazard exists, mitigation techniques can be implemented. A debris flow is a moving mass of loose mud, sand, soil, rock and water that travels down a slope under the influence of gravity. To be considered a debris flow, at least 50 percent of the material must be sand-sized particles or larger. A debris flow deposit is the resulting material deposited by the flow (Geology.com).

To mitigate the potential landslide hazard in some areas of the Project, transmission towers can be located to avoid a landslide feature by spanning across, above or below it. Access roads can be designed and constructed to avoid landslides or reduce impacts due to landslides through grading techniques. Where deemed appropriate for areas of significant concern, helicopter-based construction techniques may be implemented to avoid building access roads across landslides or landslide-prone terrain.

If debris flow deposits are identified at the new Haskell Canyon Switching Station site or the Barren Ridge Switching Station expansion site during the design phase, and construction within debris flow deposit boundaries is unavoidable, the debris flow deposit(s) shall be excavated down to bedrock beneath and upslope of the switching station, or the foundation shall be anchored in bedrock (Table 4.3.2-4, GEO-2).

No structures shall be constructed within the boundaries of identified landslides where the slide material has a mean depth greater than two feet, unless design techniques are implemented to reduce potential landslide hazard. Recommended design techniques to reduce potential landslide hazard are described in mitigation measure GEO-2, in Table 4.3.2-4.

Subsidence

The background review did not indicate that subsidence has been recently reported in the Project area. Therefore, potential subsidence is considered to have a low impact and recommendations for mitigation are not provided.

Soil Settlement

Evaluation of the potential soil settlement hazard would be performed before design and construction so that, in the event the hazard exists, mitigation techniques can be implemented. In some areas of the Project, foundations for towers or other structures and roadways can be located to avoid potential areas of settlement. Examples of possible mitigation for soils with potential for settlement include removal of the compressible/collapsible soil layers and replacement with compacted fill; surcharging to induce settlement before construction of improvements; allowing for a settlement period after or during construction of new fills; and specialized foundation design, including the use of deep foundation systems to support structures. Varieties of in-situ soil improvement techniques are also available, such as dynamic compaction (heavy tamping) or compaction grouting.

Expansive Soils

Where expansive soil conditions are found to occur and are considered detrimental to proposed improvements, mitigation techniques can be implemented. Evaluation of the potential expansive soils hazard would be performed before design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of expansive soils. To avoid site-specific subsurface evaluation, design measures to accommodate expansive soil activity can be included in the initial design for Project improvements.

Mitigation for expansive soils would typically include techniques such as over-excavation and replacement with non-expansive soil, chemical treatment (e.g., lime or cement), moisture control, and/or specific structural design for expansive soil conditions developed during design of the Project.

Corrosive Soils

Evaluation of the potential corrosive soils hazard would be performed before design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of corrosive soils. To avoid site-specific subsurface evaluation, corrosion protection measures can be included in the initial design for Project improvements.

Mitigation of corrosive soil conditions may involve the use of concrete resistant to sulfate exposure. Corrosion protection for metals may be needed for underground foundations or structures in areas where corrosive groundwater or soil could potentially cause deterioration. Typical mitigation techniques include epoxy and metallic protective coatings, the use of alternative (corrosion resistant) materials, and selection of the appropriate type of cement and water/cement ratio. Specific measures to mitigate the potential effects of corrosive soils would be developed in the design phase.

Groundwater

Evaluation of the potential shallow groundwater hazard would be performed before design and construction so that, in the event the hazard exists, mitigation techniques can be implemented, including avoiding areas of shallow groundwater or preparing for the anticipated groundwater during construction.

Measures to mitigate potential shallow groundwater conditions would include: shoring/casing of excavations below the groundwater table to prevent inundation of the excavated area; pumping groundwater from excavations to keep levels below a specified depth; using dewatering wells to pump groundwater out of the ground and lower the groundwater table at specified locations; and, where needed, utilizing more advanced and costly techniques to manage groundwater, such as the use of subsurface grout curtains or soil/cement walls. Measures to mitigate the potential impacts of excavation spoils that are saturated due to groundwater would include sandbags or berms, or the use of bins or drums to contain the excavation materials and water and reduce impacts to surface soils and surface water quality. Where deemed appropriate for areas of significant concern, the use of micropile foundations for towers could be utilized to reduce construction impacts related to drilling of larger excavations for foundations, which may be prone to impacts due to shallow groundwater.

Inundation from Dam Failure, Seiche or Tsunami

Evaluation of potential dam inundation or seiche hazards at site-specific locations would be performed before design and construction so that, in the event of inundation, measures could be in place to mitigate the effects.

Measures to mitigate the potential inundation due to dam failure or seiche would include raising the elevation of the proposed transmission tower locations to keep them elevated above the potential inundation level. These types of inundation effects are anticipated to be temporary, and may necessitate minor maintenance in the affected Alternatives to make the system operational.

Since the Project area is not considered susceptible to tsunami inundation, the Project would not result in impacts related to tsunamis, and recommendations for mitigation are not provided.

Mineral Resources

There are no adverse impacts expected to Mineral Resources from implementation of the Proposed Action or an Alternative; therefore, no mitigation measures are proposed.

Paleontology

As discussed below in the Summary of Impact Analysis Results, construction of the Project may result in high and moderate levels of impact to paleontological resources with Major/Undetermined and Maximum resource sensitivity. Some potential impacts may be mitigated by employing sound engineering practices in the planning, design and construction of the new improvements proposed for the Project. Significant initial impacts that would not be fully mitigated by Project design can be reduced to a less than significant level through the sequential implementation of mitigation measures PR-1 through PR-5, summarized in Table 4.3.2-4.

TABLE 4.3.2-4. MITIGATION MEASURES – EARTH RESOURCES

Mitigation Measure	Description
GEO-1	Foundations for towers and other structures shall be sited a safe distance from the known surface traces of all active faults.
GEO-2	No structures shall be constructed within the boundaries of identified landslides where the slide material has a mean depth greater than two feet unless design techniques are implemented to reduce potential landslide hazard. Techniques could include excavating potentially unstable material resulting in a flatter more stable slope configuration; reduction of landslide driving forces by removal of earth materials at the top of the landslide; construction of buttress and/or stabilization fills; construction of retaining walls, installation of rock bolts on the face of the slope, or installation of protective wire mesh on the slope face; and/or the construction of debris impact walls at the toe of the slope to contain rock fall debris. If switching stations construction within identified debris flow deposit boundaries is unavoidable, the debris flow deposit(s) shall be excavated down to bedrock beneath and upslope of the switching station, or the foundation shall be anchored in bedrock.
PR-1	A qualified paleontologist/principal investigator shall be retained by LADWP to develop and implement a paleontological resource mitigation plan (PMTP). A qualified paleontologist is defined as an individual with a MS or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology and paleontology of the Project area, and who has worked as a paleontological mitigation project supervisor for at least one year. The qualified paleontologist shall attend relevant pre-construction meetings to consult with grading and excavation contractors concerning excavation schedules, paleontological field techniques, and safety issues. The PMTP shall be based on Society of Vertebrate Paleontology guidelines and meet all regulatory requirements. The PMTP shall identify construction impact areas of major/undetermined to maximum sensitivity for encountering significant resources and the depths at which those resources are likely to be encountered. Preconstruction surveys of these areas shall be conducted before commencement of construction activities. The PMTP shall outline a coordination strategy to ensure that a qualified paleontological monitor will conduct full-time monitoring of all ground disturbance in sedimentary rocks determined to have a major/undetermined to maximum sensitivity. Sedimentary rocks of low, marginal, and undetermined sensitivity shall be monitored on a part-time basis (as determined by the qualified paleontologist). Geologic rock units with zero sensitivity will not require paleontological monitoring. The PMTP shall detail the significance criteria to be used to determine which resources will be avoided or recovered for their data potential. The PMTP shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. The PMTP shall specify that all paleontological work undertaken by LADWP on public land shall be carried out by qualified paleontologists with the appropriate current permits, including, but not limited to a Paleontological Resources Use Permit (for work on public lands administered by BLM). Notices to proceed will be issued by the BLM, USFS, and other agencies with jurisdiction, following approval of the PMTP.

Mitigation Measure	Description
PR-2	A paleontological monitor shall be retained on a full-time basis to monitor Project-related construction excavations (e.g., road grading, switching station mass grading, and tower footing boreholes and pad construction) in areas underlain by paleontological resources of maximum and major sensitivity. Project-related construction excavations in areas underlain by paleontological resources of undetermined sensitivity shall be monitored on a part-time basis, while Project-related construction excavations in areas underlain by paleontological resources of minor or zero sensitivity will not require any monitoring. A qualified paleontological monitor shall have a B.S. in geology or paleontology and have at least one year experience in the collection and salvage of fossil materials. The paleontological monitor shall work under the direction of the qualified paleontologist.
PR-3	Before the initiation of construction or ground-disturbing activities, all construction personnel shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological resources. All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off the right-of-way will not be allowed.
PR-4	When fossils are discovered, the qualified paleontologist (or paleontological monitor) shall recover them. In most cases fossil salvage activities can be completed in a short period of time. However, some fossil specimens (such as a complete large mammal skeleton) may require an extended salvage period. In these instances the paleontologist shall be allowed to temporarily direct, divert, or halt earthwork to allow recovery of fossil remains in a timely manner. At each fossil discovery site, field data forms shall be prepared to document the geographic, geologic, stratigraphic, and taphonomic aspects of the discovery. Because of the potential for the recovering of small fossil remains, such as isolated mammal teeth, as determined by a qualified paleontologist, it may be necessary to collect bulk samples (up to 6,000 pounds) of sedimentary rock matrix. This bulk matrix sample shall then be tested by screenwashing a 200-pound subsample to determine the presence and relative abundance of identifiable microfossils. If positive results are obtained, the entire sample shall be screenwashed.
PR-5	To the extent feasible, fossil remains collected during monitoring and salvage shall be cleaned, repaired, sorted, and cataloged as part of the mitigation program. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited in a federally accredited repository for both vertebrate and invertebrate fossils such as the Natural History Museum of Los Angeles County or the Museum of Paleontology at the University of California, Berkeley. Funds for curation will be the responsibility of LADWP. The Project qualified paleontologist shall be authorized to submit fossils with accompanying deeds of gift for curation on behalf of LADWP. Donation of the fossils shall be accompanied by financial support for initial specimen storage (costs vary for individual institutions). A final summary report shall be completed that outlines the results of the mitigation program. This report shall include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of recovered fossils.

Summary of Impact Analysis Results

No Action Alternative

Geology, Seismicity and Soils

Selection of the No Action Alternative would mean that the BRRTP, as proposed, would not be implemented. As such, potential geologic resources in the affected environment, including highly erosion-sensitive soils and distinctive geologic features, would not be impacted by construction of the Project.

In the absence of the Project, the purpose and need for the power transmission capabilities that would be met by the Project would not be achieved.

Mineral Resources

The No Action Alternative would avoid potential impacts to all unique geologic features, known sand and gravel resources, limestone and dolomite, oil wells and stone quarries within the study area by eliminating all proposed construction activities associated with the Project.

In the absence of the Project, the purpose and need for the power transmission capabilities that would be met by the Project would not be achieved.

Paleontology

The No Action Alternative would avoid potential impacts to paleontological resources by eliminating all proposed construction activities associated with the Project.

In the absence of the Project, the purpose and need for the power transmission capabilities that would be met by the Project would not be achieved.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

New 230 kV Circuit

Geology, Seismicity and Soils

The new 230 kV circuit would cross geologic formations, the majority of which contain more common rock outcrops, exposed road cuts and soil-covered areas, and are not considered highly distinctive. However, distinctive geologic features may be present in limited areas of some rock formations. Therefore, these rock formation units have been assigned a moderate sensitivity rating. This portion of the Project would traverse 0.3 mile of low distinctive geologic feature impact level areas and 11.7 miles of moderate distinctive geologic feature impact level areas. The new 230 kV circuit would not cross any high impact level earthquake fault zones. The entire length of this portion of the Project has an approximate ground shaking potential of 0.40g. Peak horizontal ground accelerations in the range of 0.30g to 0.40g are considered to have a moderate initial impact. Only 7.3 miles of the new 230 kV circuit have available liquefaction hazard zone data. Of those 7.3 miles, this portion of the Project would traverse 1.1 miles of high impact level liquefaction hazard zones. The ratio of liquefaction zones to available data is 15.1%. The new 230 kV circuit would traverse 5.5 miles of high impact level mapped landslide areas. Earthquake-induced landslide hazard zones data were only available for 7.0 miles of this proposed route. Of those 7.0 miles, this portion of the Project would traverse 7.0 miles of high impact level earthquake-induced landslide areas. The new 230 kV circuit would traverse 1.5 miles of high impact level inundation areas (from dam failure). This portion of the Project would traverse 0.1 mile of areas with low potential initial impacts due to groundwater, 2.2 miles of areas with moderate potential initial impacts, and 2.2 miles of areas with high potential initial impacts. No groundwater impact data were available for 4.5 miles of this route.

The potential soil impact refers to the Project's potential to cause erosion loss of surface soils and impacts to potentially sensitive soils. This portion of the Project would traverse 0.3 mile of low sensitivity/low impact level soils, 0.4 mile of moderate sensitivity/moderate impact level soils, and 11.6 miles of high sensitivity/high impact level soils. Based on available NRCS soil data, the new 230 kV circuit would not traverse any potentially expansive soils. Expansive soils may be present in areas of the Project not indicated by the limited NRCS soil data. Corrosive soil data are only available for 8.6 miles of the new 230 kV circuit. Of those 8.6 miles, this portion of the Project would cross 1.3 miles of areas with low impact corrosive soil potential, 0.3 mile of areas with moderate impact corrosive soil potential, and 7.0 miles of areas with high impact corrosive soil potential.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the new 230 kV circuit.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

Paleontology

Construction of the new 230 kV circuit would traverse 0.6 mile of areas underlain by paleontological resources defined as having minor sensitivity and 11.1 miles of areas underlain by paleontological resources defined as having maximum sensitivity.

Reconductoring of BR-RIN Transmission Line

Geology, Seismicity and Soils

The reconductoring of the BR-RIN 230 kV transmission line would cross geologic formations, the majority of which contain more common rock outcrops, exposed road cuts and soil-covered areas, and are not considered highly distinctive. However, distinctive geologic features may be present in limited areas of some rock formations. Therefore, these rock formation units have been assigned a moderate sensitivity rating. This portion of the Project would traverse 46.4 miles of low distinctive geologic feature impact level areas and 29.9 miles of moderate distinctive geologic feature impact level areas. The reconductoring would traverse 4.7 miles of high impact level earthquake fault zones. This portion of the Project has an approximate ground shaking potential of 0.40g to 0.80g. Peak horizontal ground accelerations in the range of 0.30g to 0.40g are considered to have a moderate initial impact, and peak horizontal ground accelerations in the range of 0.50g to 0.80g are considered to have a high impact. The reconductoring would traverse 2.7 miles of areas with low potential initial impacts due to ground shaking, 50.9 miles of areas with moderate potential initial impacts, and 22.7 miles of areas with high potential initial impacts. Only 31.6 miles of reconductoring have available liquefaction hazard zone data. Of those 31.6 miles, this portion of the Project would traverse 10 miles of high impact level liquefaction hazard zones. Mapped landslide data were available for 42.8 miles of this portion of the Project. Of those 42.8 miles, the reconductoring would traverse 2.9 miles of high impact level mapped landslide areas. Earthquake-induced landslide hazard zones data were only available for 31.6 miles of this portion of the Project. Of those 31.6 miles, the reconductoring would traverse 11.9 miles of high impact level earthquake-induced landslide areas. The reconductoring would traverse 2.4 miles of high impact level inundation areas (from dam failure). This portion of the Project would traverse 2.8 miles of areas with low potential initial impacts due to groundwater, 2.3 miles of areas with moderate potential initial impacts, and 3.5 miles of areas with high potential initial impacts. No groundwater impact data were available for 8.6 miles of this route.

The potential soil impact refers to the Project's potential to cause erosion loss of surface soils and impacts to potentially sensitive soils. This portion of the Project would traverse 44.6 miles of low sensitivity/low impact level soils, 2.3 miles of moderate sensitivity/moderate impact level soils, and 24.1 miles of high sensitivity/high impact level soils. Based on available NRCS soil data, the reconductoring would traverse 0.4 mile of potentially expansive soils. Corrosive soil data are only available for 55.6 miles of the Project. Of those 55.6 miles, the reconductoring would cross 10.2 miles of areas with low impact corrosive soil potential, 26.2 miles of areas with moderate impact corrosive soil potential, and 19.2 miles of areas with high impact corrosive soil potential.

Mineral Resources
No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the reconductoring.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

Paleontology
The reconductoring of the BR-RIN 230 kV transmission line would traverse 44 miles of sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity. The reconductoring would traverse 11.1 miles of sedimentary deposits defined as having minor, major/undetermined, and maximum sensitivity. In addition, 10.4 miles of the reconductoring would cross areas underlain by plutonic igneous rocks and metamorphic rocks (including Pelona Schist) with zero resource sensitivity. 4.5 miles of this portion of the Project traverse sedimentary deposits of Quaternary older alluvium (fluvial and alluvial fan deposits of Pleistocene age; ~1.8 to 0.01 Ma), the Vasquez Formation (alluvial fan, fluvial, and deltaic strata of late Oligocene to early Miocene age; ~26 to 22 Ma), and the San Francisquito Formation (marine sedimentary rocks of late Cretaceous to early Paleocene age ~70 to 60 Ma). Although not proven to contain fossils, the sedimentary origin of Quaternary older alluvium and the Vasquez Formation indicates a strong but unproven (i.e., undetermined) potential for producing fossil remains. The San Francisquito Formation is defined as having major paleontological resource sensitivity. 2.3 miles of this portion of the Project traverse sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Anaverde Formation (terrestrial and fluvial deposits of late Miocene to early Pliocene age ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). All of these rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity.

New Haskell Canyon Switching Station

Geology, Seismicity and Soils

Highly distinctive geologic features were not observed at the Haskell Canyon site. Based on the sedimentary rock formations present at the site, the initial impacts to distinctive geologic features are considered moderate. The Haskell Canyon site is not in an Earthquake Fault Zone, and the initial impacts related to surface fault rupture are considered low. The design PGA for the proposed Haskell Canyon station is 0.40g. The ground shaking potential at the station site is considered to have a moderate initial impact. The Haskell Canyon site is not in a potential liquefaction zone based on the California Seismic Hazards Zones map, and the initial impacts related to liquefaction are considered low. The Haskell Canyon site is not in a potential earthquake-induced landslide zone based on the California Seismic Hazards Zones map, and the initial impacts related to earthquake-induced landslides are considered low. Landslides are shown on geologic maps in the vicinity of the Haskell Canyon site, and were observed during geologic field reconnaissance. Constructing the switching station on a landslide would have a high initial impact on the Project. There are no data readily available regarding groundwater levels at the Haskell Canyon site. However, shallow groundwater or perched groundwater may be present at the site, and could have a high initial impact to the Project if encountered during construction. The Haskell Canyon site is not in a dam failure inundation zone, and the initial impacts related to dam failure inundation are considered low.

The soil sensitivity rating at the proposed Haskell Canyon Switching Station site has been categorized as high, and the initial impact of erosion of soils at this site is considered high. There is a potential for compressible soils to be present at the Haskell Canyon site. Constructing the switching station on soils known to have a potential for settlement would have a high initial impact on the Project. NRCS data regarding the expansive potential of surface soils at the Haskell Canyon site have not been reported. However, based on the potential presence of clay shale units at this site, moderately to highly expansive soils may be present. Constructing the switching station on known expansive soils would have a high initial impact on the Project. NRCS data regarding the corrosive potential of surface soils at the Haskell Canyon site have not been reported. However, corrosive soils may be present at the site, and could have a high initial impact on the Project.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by construction of the new Haskell Canyon Switching Station.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

Paleontology

Construction of the new Haskell Canyon Switching Station would occur in an area underlain by sedimentary deposits of the Saugus Formation (fluvial and alluvial fan deposits of late Pliocene to early Pleistocene age; ~3 to 1.5 Ma), the Castaic Formation (marine sandstones of late Miocene to early Pliocene age; ~6 to 5 Ma), and the Mint Canyon Formation (deltaic, fluvial, and lacustrine deposits of middle to late Miocene age; ~14 to 11 Ma). These rock units are known to produce significant paleontological resources and are defined as having maximum sensitivity. Ground disturbance estimates for areas of maximum sensitivity range from level 2 to 6 (i.e., moderate to high initial impacts) and these impacts would require mitigation. These potential moderate impacts can be reduced to low residual impacts through adoption of appropriate mitigation measures: PR-1, PR-2, PR-3, PR-4, and PR-5 (Table 4.3.2-4).

Expansion of Barren Ridge Switching Station

Geology, Seismicity and Soils

Distinctive geologic features were not observed at Barren Ridge, and the initial impact to distinctive geologic features is considered low. The Barren Ridge site is not in an Earthquake Fault Zone and the initial impacts related to surface fault rupture are considered low. The design PGA for the proposed Barren Ridge station is 0.52g. The ground shaking potential at the station site is considered to have a high initial impact. The Barren Ridge site is not in a potential liquefaction zone based on the California Seismic Hazards Zones map, and the initial impacts related to liquefaction are considered low. The Barren Ridge site is not in a potential earthquake-induced landslide zone based on the California Seismic Hazards Zones map, and the initial impacts related to earthquake-induced landslides are considered low. There are no landslides at the Barren Ridge site. There are no data available regarding groundwater levels at the Barren Ridge site. However, shallow groundwater or perched groundwater may be present at the site, and could have a high initial impact to the Project if encountered during construction. The Barren Ridge site is not in a dam failure inundation zone, and the initial impacts related to dam failure inundation are considered low.

The soil sensitivity rating at Barren Ridge has been categorized as low, and the impact of erosion of soils at this site is considered low. There is a potential for compressible soils to be present at the Barren Ridge site. Constructing the expanded switching station on soils known to have a potential for settlement would have a high initial impact to the Project. NRCS data regarding the expansive potential of surface soils at the Barren Ridge site have not been reported. However, based on the sandy nature of the surface soils mapped at the site and observed during field reconnaissance, the expansive potential of the soils at this site is considered low, and is considered to have a low initial impact to the Project. The corrosive soil potential at the Barren Ridge site has been categorized as low for concrete and moderate for steel according to NRCS data. Therefore, corrosive soils may be present at the site, and could have a moderate initial impact on the Project.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the expansion of the Barren Ridge Switching Station.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area.

Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

Paleontology
The proposed expansion of the existing Barren Ridge Switching Station would occur in an area underlain by sedimentary deposits of Quaternary alluvium. Because these deposits accumulated relatively recently, they are defined as having only minor sensitivity.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

Geology, Seismicity and Soils
The Alternative 1 230 kV double-circuit transmission line would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along The Alternative 1 transmission line due to seismic activity would range from 0.30g to 0.60g. Liquefaction hazard zones would be near the southern end of the transmission line alignment near the proposed Haskell Canyon Switching Station. Mapped landslides and Earthquake-Induced Landslide Hazard Zones would be in the steep ANF in the southern portion of the transmission line alignment. Variable areas of slight to very severe erosion potential exist along the proposed Alternative 1 transmission line alignment. An area of high expansion potential is along the existing Castaic – Rinaldi corridor. Areas of low to high corrosive soil potential exist along the proposed transmission line. Reported groundwater depths along this proposed transmission line alignment are on the order of 138 to 336 feet deep in the Antelope Valley area; a 0.2-mile portion of the Alternative 1 transmission line would have an area of reported shallow groundwater 10 feet deep along the existing Castaic – Rinaldi corridor. 1.5 miles of the Alternative 1 transmission line would be within a potential dam failure inundation zone due to the proximity to Castaic Lake and Bouquet Reservoir. A summary of the affected environment for the Alternative 1 transmission line is presented in Table 28 in the Preliminary Geotechnical Evaluation.

CEQA Significance
Construction of the Alternative 1 transmission line would have no significant impact to distinctive geologic features. The Alternative 1 transmission line could have a potentially significant impact to sensitive soils due to the fact that it would traverse high impact level/high sensitivity soils, and could result in a potentially significant geologic impact to the Project due to the fact that it would traverse earthquake fault zones, high impact level ground shaking potential areas, liquefaction hazard zones, mapped landslide areas, earthquake-induced landslide areas, high impact level corrosive soil areas, and potentially expansive soils. However, with the implementation of the appropriate mitigation measures, including mitigation measures GEO-1 and GEO-2 (Table 4.3.2-4), initial impacts from the construction of the Alternative 1 transmission line to sensitive soils, and impacts to this transmission line related to potential seismic and geologic hazards, can be reduced to less than significant levels.

The new 230 kV circuit would traverse high impact level liquefaction hazard zones, high impact level mapped landslide areas, high impact level earthquake-induced landslide areas, high impact level corrosive soil areas, and high impact level/high sensitivity soils. Due to these factors, construction of the new 230 kV circuit could have a potentially significant impact to geologic resources. However, with the implementation of the appropriate mitigation measures, including mitigation measure GEO-2 (Table 4.3.2-4), initial impacts from the construction of the new 230 kV circuit to geologic resources and impacts to this part of the Project related to potential seismic and geologic hazards can be reduced to less than significant levels.

The reconductoring of the BR-RIN transmission line would traverse high impact level earthquake fault zones, high impact level ground shaking areas, high impact level liquefaction hazard zones, high impact level mapped landslide areas, high impact level earthquake-induced landslide areas, high impact level corrosive soil areas, potentially expansive soils, and high impact level/high sensitivity soils. Due to these factors, the reconductoring could have a potentially significant impact to geologic resources. However, with the implementation of the appropriate mitigation measures, including mitigation measure GEO-2 (Table 4.3.2-4), initial impacts from the reconductoring of the BR-RIN transmission line to geologic resources and impacts to the reconductoring related to potential seismic and geologic hazards can be reduced to less than significant levels.

Construction of the new Haskell Canyon Switching Station could have a potentially significant impact to geologic resources due to the fact that landslides have been observed onsite, high impact level/high sensitivity soils are onsite, there is a potential for compressible soils to be onsite, and there is a potential for expansive soils to be onsite. However, with the implementation of the appropriate mitigation measures, including mitigation measure GEO-2 (Table 4.3.2-4), initial impacts from the construction of the new Haskell Canyon Switching Station to geologic resources and impacts to the switching station related to potential seismic and geologic hazards can be reduced to less than significant levels.

Expansion of the Barren Ridge Switching Station would have a less than significant impact to geologic resources, because the existing switching station is in an area with no distinctive geologic features and with low impact/low sensitivity soils. The Barren Ridge Switching Station is in an area with a high impact ground shaking potential, the potential for high impact compressible soils, and moderate impact corrosive soils. Therefore, expansion of the Barren Ridge Switching Station could have a potentially significant geologic impact. However, with the implementation of the appropriate mitigation measures, including mitigation measure GEO-2 (Table 4.3.2-4), initial impacts to the Barren Ridge Switching Station expansion related to potential seismic and geologic hazards can be reduced to less than significant levels.

General mitigation for impacts to geologic resources and impacts related to geologic hazards are presented below. For detailed mitigation recommendations for each resource and hazard, see the Mitigation Planning section above.

Mitigation for potential soil erosion during construction could include prudent site management practices, use of erosion prevention mats, silt fencing, temporary drainage devices, hand-excavated foundations, helicopter access and avoiding areas of significant concern.

Mitigation for potential seismic hazards could include designing the system to resist or accommodate an acceptable amount of movement and conforming to current seismic design standards. Mitigation measures include locating transmission system improvements a safe distance away from the trace of an active fault (Table 4.3.2-4, GEO-1)

Mitigation for potential liquefaction hazards could include avoiding the liquefaction zone by moving tower locations upslope from valley bottoms, in-situ ground modification, or supporting towers with piles at depths designed for liquefaction.

Mitigation for potential impacts due to landslides could include avoiding a landslide feature by spanning across, above or below it; designing and constructing access roads to reduce landslide impacts through grading techniques; and helicopter-based construction techniques for areas of significant concern. Specifically recommended mitigation measures include excavating debris flow deposit(s) down to bedrock beneath and upslope of any switching station that must be constructed within identified debris flow deposit boundaries (Table 4.3.2-4, GEO-2) and avoiding construction within the boundaries of identified landslides where the slide material has a mean depth greater than two feet, unless design techniques are implemented to reduce potential landslide hazard. Recommended design techniques to reduce potential landslide hazard are described in mitigation measure GEO-2 (Table 4.3.2-4).

Mitigation for potential impacts due to compressible soils could include avoiding areas prone to settlement, removal and recompaction of compressible soils, specialized foundation design including the use of deep foundation systems to support structures, and in-situ ground modification.

Mitigation for potential impacts due to expansive soils could include avoiding areas of expansive soils, overexcavation and replacement with non-expansive soil, soil treatment, and moisture control.

Mitigation for potential impacts due to corrosive soils could include avoiding areas of corrosive soils, the use of concrete resistant to sulfate exposure, protective coatings for metallic substructures and components, and the use of corrosion-resistant materials.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the Alternative 1 transmission line.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

CEQA Significance

Alternative 1, including the Project components common to all action Alternatives and the 230 kV double-circuit transmission line, would have no significant impact on mineral resources, and no mitigation would be required.

Paleontology

Alternative 1 has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring along a 25-mile section of the southern portion of the Alternative 1 transmission line alignment between approximately MP 22.4 and the proposed Haskell Canyon Switching Station. A total of 8.4 miles of this Alternative are slated for helicopter construction of lattice towers and all this mileage is underlain by rock units having maximum sensitivity (7.7 miles of Ridge Route Formation and 0.7 mile of Peace Valley Formation). Because of steep terrain in these areas, ground disturbance would likely create initial impacts to paleontological resources that would also require mitigation. As summarized in Table 7.1 in the Paleontological Resources Assessment Report, these impacts would include a total of 13.1 miles of moderate initial impacts and 1.2 miles of high initial impacts.

CEQA Significance

Impacts to paleontology from the Alternative 1 transmission line and the proposed Haskell Canyon Switching Station would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5 (Table 4.3.2-4). In contrast, implementation of the remaining Project components would not create any significant impacts to paleontological resources, and mitigation would not be needed.

Alternative 2

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Geology, Seismicity and Soils

The Alternative 2 transmission line would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along the Alternative 2 transmission line alignment due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are in the southern Antelope Valley and San Andreas Rift Zone areas. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are in the steep ANF in the southern portion of the transmission line alignment. Variable areas of slight to very severe erosion potential exist along the proposed Alternative 2 transmission line alignment. Areas of low to high corrosive soil potential exist along the proposed transmission line alignment. Reported groundwater depths along this proposed transmission line alignment are on the order of 172 to 295 feet deep in the Antelope Valley area, and 10 to 184 feet deep in the ANF. 1.4 miles of the Alternative 2 transmission line would be within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir and Bouquet Reservoir. A summary of the affected environment for the Alternative 2 transmission line is presented in Table 28 in the Preliminary Geotechnical Evaluation.

A 7.5-mile-long temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance
Construction of the Alternative 2 transmission line would have no significant impact to distinctive geologic features. The Alternative 2 transmission line could have a potentially significant impact to sensitive soils due to the fact that it would traverse high impact level/high sensitivity soils, and could result in a potentially significant geologic impact to the Project due to the fact that it would traverse earthquake fault zones, high impact level ground shaking potential areas, liquefaction hazard zones, mapped landslide areas, earthquake-induced landslide areas, and high impact level corrosive soil areas. However, with the implementation of the appropriate mitigation measures, including mitigation measures GEO-1 and GEO-2 (Table 4.3.2-4), initial impacts from the construction of the Alternative 2 transmission line to sensitive soils, and impacts to this transmission line related to potential seismic and geologic hazards, can be reduced to less than significant levels.

See CEQA Significance for Alternative 1, Geology, Seismicity and Soils, above for a discussion of the CEQA significance evaluation and associated mitigations for the Project components common to all action Alternatives.

Mineral Resources
No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the Alternative 2 transmission line.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

CEQA Significance
Alternative 2, including the Project components common to all action Alternatives and the 230 kV double-circuit transmission line, would have no significant impact on mineral resources, and no mitigation would be required.

Paleontology
Alternative 2 has the potential to create significant impacts to paleontological resources with maximum sensitivity occurring along a two-mile section of the southern portion between MP 19.2 and 21.2. As summarized in Table 7.1 in the Paleontological Resources Assessment Report, these significant impacts would include a total of 2.2 miles of moderate initial impacts.

A 7.5-mile-long temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance
Paleontology impacts of the Alternative 2 transmission line and the proposed Haskell Canyon Switching Station would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5 (Table 4.3.2-4). In contrast, implementation of the remaining Project components would not create any significant impacts to paleontological resources, and mitigation would not be needed.

The temporary impacts associated with the temporary transmission line would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

Geology, Seismicity and Soils
The Alternative 2a transmission line would cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along the Alternative 2a transmission line alignment due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are in the southern Antelope Valley and San Andreas Rift Zone areas. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are in the steep

ANF in the southern portion of the transmission line alignment. Variable areas of slight to very severe erosion potential exist along the proposed transmission line alignment. Areas of low to high corrosive soil potential exist along the proposed Alternative 2a transmission line alignment. Reported groundwater depths along this proposed transmission line alignment are on the order of 172 to 295 feet deep in the Antelope Valley area, and 10 to 184 feet deep in the ANF.1.4 miles of the Alternative 2a transmission line would be within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir and Bouquet Reservoir. The only differences between Alternative 2 and Alternative 2a are that Alternative 2a would cross 0.3 fewer miles of earthquake-induced landslide hazard zones, and would cross 1.9 more miles of soils with severe to very severe erosion potential. A summary of the affected environment for the Alternative 2a transmission line is presented in Table 28 in the Preliminary Geotechnical Evaluation.

2.5 miles of temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance

Construction of the Alternative 2a transmission line would have no significant impact to distinctive geologic features. The Alternative 2a transmission line could have a potentially significant impact to sensitive soils due to the fact that it would traverse high impact level/high sensitivity soils, and could result in a potentially significant geologic impact to the Project due to the fact that it would traverse earthquake fault zones, high impact level ground shaking potential areas, liquefaction hazard zones, mapped landslide areas, earthquake-induced landslide areas, and high impact level corrosive soil areas. However, with the implementation of the appropriate mitigation measures, including mitigation measure GEO-1 and GEO-2 (Table 4.3.2-4), initial impacts from the construction of the Alternative 2a transmission line to sensitive soils, and impacts to this transmission line related to potential seismic and geologic hazards, can be reduced to less than significant levels.

See CEQA Significance for Alternative 1, Geology, Seismicity and Soils, above for a discussion of the CEQA significance evaluation and associated mitigations for the Project components common to all action Alternatives.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by the Alternative 2a transmission line.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

CEQA Significance

Alternative 2a, including the Project components common to all action Alternatives and the 230 kV transmission line, would have no significant impact on mineral resources, and no mitigation would be required.

Paleontology

The Alternative 2a transmission line, which bypasses the unincorporated community of Green Valley, has the potential to create impacts to paleontological resources with major/undetermined sensitivity occurring along a 0.3-mile section between approximately MP 6.0 and 6.3. A total of 3.6 miles of the Alternative 2a transmission line are slated for helicopter construction of lattice towers, all of which is underlain by rock units having zero resource sensitivity. As summarized in Table 7.1 in the Paleontological Resources Assessment Report, these impacts would include a total of 0.3 mile of moderate initial impacts

2.5 miles of temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance

Paleontology impacts of the Alternative 2a transmission line and the proposed Haskell Canyon Switching Station would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5 (Table 4.3.2-4). In contrast, implementation of the remaining Project components would not create any significant impacts to paleontological resources, and mitigation would not be needed.

The temporary impacts associated with the temporary transmission line would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common Project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Geology, Seismicity and Soils

The Alternative 3 transmission line would cross 0.4 mile of white tuff (volcanic ash) marker beds, which have a high sensitivity rating and are considered distinctive geologic features. The Alternative 3 transmission line would also cross two active faults with the potential for surface rupture, including the active Garlock fault zone at the beginning of the route near the Barren Ridge Switching Station, and the active San Andreas fault zone. Potential ground shaking along this transmission line alignment due to seismic activity would range from 0.25g to 0.80g. Liquefaction hazard zones are in the San Andreas Rift Zone and in low-lying canyon areas in the southern part of the transmission line alignment. Mapped landslides and Earthquake-Induced Landslide Hazard Zones are in the steep Sierra Pelona in the southern portion of the Alternative 3 transmission line alignment. Variable areas of slight to severe erosion potential exist along the proposed transmission line alignment. Areas of low to high corrosive soil potential exist along the proposed Alternative 3 transmission line alignment. Reported groundwater depths along this proposed transmission line alignment are on the order of 10 to 295 feet deep in the Antelope Valley area, and 10 to 326 feet deep in the portions of the Sierra Pelona and canyon areas in the southern portion of the Alternative 3 transmission line alignment. 1.7 miles of the Alternative 3 transmission line would be within a potential dam failure inundation zone due to the proximity to Fairmont Reservoir. A summary of the affected environment for the Alternative 3 transmission line is presented in Table 28 in the Preliminary Geotechnical Evaluation.

One half-mile of temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance

Construction of the Alternative 3 transmission line could have a potentially significant impact to a distinctive geologic feature, due to the fact that it would cross white tuff marker beds. This transmission line could also have a potentially significant impact to sensitive soils due to the fact that it would traverse high impact level/high sensitivity soils, and could result in a potentially significant geologic impact to the Project due to the fact that it would traverse earthquake fault zones, high impact level ground shaking potential areas, liquefaction hazard zones, mapped landslide areas, earthquake-induced landslide areas, and high impact level corrosive soil areas. However, with the implementation of the appropriate mitigation measures, including mitigation measures GEO-1 and GEO-2 (Table 4.3.2-4), initial impacts from the construction of the Alternative 3 transmission line to sensitive soils, and impacts to this Alternative related to potential seismic and geologic hazards can be reduced to less than significant levels.

See CEQA Significance for Alternative 1, Geology, Seismicity and Soils, above for a discussion of the CEQA significance evaluation and associated mitigations for the Project components common to all action Alternatives.

Mineral Resources

No unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by Alternative 3.

Although known sand and gravel resources, limestone and dolomite and stone quarries are within the general study area, Project facilities would not be within an active production area. Therefore, construction and operation of the Project are not expected to interfere with access to these resources.

CEQA Significance
Alternative 3, including the Project components common to all action Alternatives and the Alternative 3 transmission line, would have no significant impact on mineral resources, and no mitigation would be required.

Paleontology
Alternative 3 has the potential to create impacts to paleontological resources with maximum sensitivity occurring along 3.4-mile and 2.7-mile sections of the southern portion between approximately MP 24.4 and 27.8 and MP 29.2 and 31.9, respectively. As summarized in Table 7.1 of the Paleontological Resources Assessment Report, these impacts would include a total of 5.2 miles of moderate initial impacts and 0.2-mile of high initial impacts.

One half-mile of temporary transmission line would be constructed to maintain electrical service along the existing BR-RIN transmission line while the new three-circuit towers are constructed. Impacts associated with this construction would be the same as those listed above. After completion of construction of the three-circuit towers, the temporary transmission line would be removed and all temporary staging and work areas would be revegetated. Impacts associated with the temporary transmission line would also be temporary.

CEQA Significance
Paleontology impacts of the Alternative 3 transmission line and the proposed Haskell Canyon Switching Station would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5 (Table 4.3.2-4). In contrast, implementation of the remaining Project components would not create any significant impacts to paleontological resources, and mitigation would not be needed.

The temporary impacts associated with the temporary transmission line would be reduced to a less than significant level through the implementation of mitigation measures PR-1 through PR-5.

4.3.3 WATER RESOURCES

Introduction

Initial impact levels of each Alternative route were evaluated by combining resource sensitivity and access level category (*i.e.*, level of impact expected from ground disturbance). All known water resources within the study corridors of each Alternative were inventoried and evaluated to determine potential impacts resulting from the Project.

Impacts to inventoried water resources were evaluated considering the following factors:

- Construction-, operation-, and maintenance-related impacts

- Occurrence of affected water resource areas
- Water resource sensitivity levels
- Access level category
- Mitigation measures to reduce initial impact levels
- Comments and concerns submitted by agencies and members of the public.

Scoping Issues Addressed

To help the BLM, USFS, and LADWP determine significant issues to be analyzed in the Draft EIS/EIR, government agencies and the public were invited to participate in the scoping process from April through May 2008. The following areas of concern related to water resources are addressed in this analysis:

- Stormwater run-off prevention and impacts to drainages, wetlands, Waters of the State, Waters of the U.S. and intermittent and ephemeral streams
- Potential for elimination of watercourses and/or the canalization of natural and manmade drainages or conversion of subsurface drains
- Grading and sub-grading roads for maintenance causing a channeling effect for water direction by building up berms

Impact Assessment Methodology

Initial impacts levels of each Alternative were evaluated by combining resource sensitivity and access level category (*i.e.*, level of impact expected from ground disturbance). All known water resources within the study corridors of each Alternative were inventoried and evaluated to determine potential impacts resulting from construction, operation, maintenance, and decommissioning of the Project.

An impact assessment model was developed that combined the variables of resource sensitivity and access level to determine impact intensity (high, moderate, low). The complete methodology and detailed results of the impact assessment are presented in the Water Resources Technical Report in Volume IV of this document.

Once initial impact levels were established for each Alternative, specific measures for mitigating or reducing high- or moderate-level impacts were applied, as required by CEQA Section 15126.4. Residual impacts are the impacts remaining after applying mitigation measures.

Significance Criteria

In compliance with CEQA requirements, conclusions are made regarding the significance of each identified impact that would result from the Proposed Action and Alternatives. Appropriate criteria derived from CEQA Guidelines (Appendix G, Environmental Checklist Form, Section IX) have been identified and utilized to make these significance conclusions. Potential impacts are assessed and determined to be either of no impact, less than significant impact, less than significant impact with implementation of mitigation measures, or significant impact. Impacts of the Proposed Action or Alternatives would be considered significant and would require mitigation if the Project:

- Violates any water quality standards or waste discharge requirements, creates new sources of polluted runoff, or otherwise substantially degrades water quality.
- Substantially depletes groundwater supplies or interferes with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (*e.g.*, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alters the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff.
- Has a substantial adverse effect of federal protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Places within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Results in or is subject to damage from inundation by seiche, tsunami, or mudflow.

Significance conclusions for individual impacts are not required for compliance with NEPA; therefore, conclusions presented in the following analysis regarding the significance of identified impacts are provided for the purposes of CEQA only. Pursuant to NEPA, this analysis is intended to compare the Alternatives, and identify any adverse effects to water resources that cannot be avoided. Adverse effects may be direct, indirect, or cumulative. Cumulative effects are discussed in Chapter 5 of this Final EIS/EIR.

Mitigation Planning

Potential impacts to water resources include temporary (construction-related) and long-term (permanent) impacts. When evaluating potential impacts, it was assumed the Project would comply with all applicable federal, State, and local regulatory requirements that protect surface water and groundwater.

The GPs described in Chapter 2 are measures that would be included in the Project description and implemented as part of the Project. Impact analysis assumed that all applicable GPs would be implemented as defined.

The USFS, Pacific Southwest Region has established water quality protection BMPs and BMP evaluation protocols for use on regional Forest Service lands. The GPs and mitigation measures described in this section have been developed with USFS BMPs in mind, as applicable.

The mitigation measures described in Table 4.3.3-1 below would be used on a site-specific basis to minimize Project-related impacts if it is determined that GPs would not fully mitigate the impacts for which they are presented.

TABLE 4.3.3-1. MITIGATION MEASURES – WATER RESOURCES

Mitigation Measure	Description
HYD-1	For Project construction and operation, off-road or cross-country access routes shall be preferred, as feasible, over the construction of new access roads. Such access roads would be approved in advance by the Environmental Monitor and the Project Manager and be flagged with easily seen markers. Any new access roads shall be constructed by mowing or crushing, rather than blading, wherever possible. Mowing for temporary or permanent access roads shall be limited to a 12 foot wide area on straight portions of the road (slightly wider on turns), and the mowing height shall be no less than 4 inches from finished grade. Existing crossings shall be utilized at perennial streams, wetlands, and irrigation channels to the extent feasible. New access roads not required for ongoing maintenance shall be permanently closed after construction using the most effective and least environmentally damaging methods appropriate to that specific area, with concurrence of the landowner or land manager (e.g., stockpiling and replacing topsoil, or rock replacement).
HYD-2	Roads would be built as near as possible to right angles to the streams and washes, if feasible. Culverts would be installed where necessary. All construction and maintenance activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition before the construction of the transmission line.
HYD-3	New impervious areas associated with temporary construction would be restored to existing conditions, including but not limited to revegetation, to the extent possible after completion of Project construction.
HYD-4	Stormwater drainage inside switching station walls would be designed to minimize erosion and increase sediment control. Internal runoff would be released from the switching station by means of surface drainage structures designed to filter contaminants from water flow. Drainage from the property would be collected and controlled by surface improvements, as detailed in the SWPPP.
HYD-5	Structures and new access roads placed within a 100-year floodplain would be engineered so that they do not impede or redirect flood flows or raise the flood elevation.
HYD-6	Structures within the 100-year floodplain of rivers and streams would be designed to minimize the capture of flood debris to prevent flow obstructions and scouring during flood flows.
HYD-7	Structures adjacent to or downslope of lakes and reservoirs would be designed to minimize damage from inundation of a seismic seiche.

Summary of Impact Analysis Results

Project-Wide Construction-Related Impacts

Violation of water quality standards, creation of new sources of polluted runoff, or other degradation of water quality.

Temporary impacts to water quality could result from stormwater runoff during construction of the Project. Construction of the transmission line and the new Haskell Canyon Switching

Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water.

CEQA Significance
Potential impacts to water quality from sedimentation, turbidity, and oil or chemical contamination would be less than significant. Application of GPs such as GP-5, GP-7, and GP-19 would further reduce these potential impacts.

Substantial alteration of existing drainage patterns resulting in substantial erosion or siltation on- or off-site.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. This ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation.

CEQA Significance
Implementation of mitigation measures HYD-1 and HYD-2 (Table 4.3.3-1) would reduce potential impacts resulting from substantial drainage pattern alteration to less than significant.

Substantial alteration of existing drainage patterns, including through the alteration of the course of a stream or river, or substantial increase of the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. The proposed transmission line could potentially alter drainage patterns within the work areas and result in an increase of the rate or amount of surface water runoff.

CEQA Significance
Implementation of mitigation measures HYD-1 and HYD-2 (Table 4.3.3-1) would reduce potential impacts resulting from flooding through alteration of existing drainage patterns to less than significant.

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or contribution of substantial additional sources of polluted runoff.

Construction of the transmission line and the New Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Creation of new permanent access and spur roads or widening of existing roads would potentially create additional sources of runoff. Likewise, grading activities for construction of the new Haskell Canyon Switching Station and extension of the existing Barren Ridge Switching Station would potentially contribute additional sources of polluted runoff.

CEQA Significance

Potential impacts related to contribution of substantial additional sources of polluted runoff are less than significant. Application of GPs such as GP-5 would further reduce these potential impacts.

Have a substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

Construction of the transmission line and the new Haskell Canyon Switching Station, expansion of the Barren Ridge Switching Station, and reconductoring of the existing BR-RIN line would require ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Construction of the new Haskell Canyon Switching Station and expansion of the existing Barren Ridge Switching Station may also require importation of soil for filling activities. These activities could impact wetlands by removing wetland vegetation and soils, or by filling wetlands with upland soils and destroying hydrological connectivity.

CEQA Significance

Potential impacts to federal protected wetlands are less than significant. Application of GPs such as GP-49 would further reduce these potential impacts.

Project-Wide Operation- and Maintenance-Related Impacts

Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or contribution of substantial additional sources of polluted runoff water.

Blading and other methods of vegetation removal for clearance of roads and construction areas would decrease the ability of the soil to absorb water and increase stormwater runoff from disturbed areas. Increased runoff could result in increased erosion, and siltation and flooding downstream of the disturbed areas.

CEQA Significance

Implementation of mitigation measures HYD-3 and HYD-4 (Table 4.3.3-1) would reduce these potential impacts to less than significant.

Placement of structures within a 100-year flood hazard area which would impede or redirect flood flows.

Construction of the new 230 kV transmission line would result in the placement of tower structures within 100-year flood hazard areas (floodplains). Structures placed in these areas could potentially impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation level.

CEQA Significance
Implementation of mitigation measures HYD-5 and HYD-6 (Table 4.3.3-1) would reduce potential impacts resulting from impeding or redirecting flood flows to less than significant.

Result in or be subject to damage from inundation by seiche, tsunami, or mudflow.

Segments of the 230 kV transmission line and a portion of the existing BR-RIN line would be adjacent to bodies of water capable of producing a seiche during or following a seismic event, and would potentially be subject to damage from inundation.

CEQA Significance:
Implementation of mitigation measure HYD-7 (Table 4.3.3-1) would reduce potential impacts resulting from damage or destruction of tubular steel pole (TSP) or lattice structures during a seismic seiche to less than significant.

Other Project-Wide Potential Impacts

As discussed below, the Project was determined to have no impact regarding the following criteria, which shall not be discussed hereafter. Significance under CEQA for each would be no impact.

Substantial depletion of groundwater supplies or interference with groundwater recharge resulting in a net deficit of aquifer volume or lowering of level of the local groundwater table.

No Impact. Construction of steel lattice structures for the new transmission line would require concrete foundations with footings averaging a depth of 20 feet, depending on soil conditions, and construction of TSPs would require foundations from 15 feet to 30 feet deep, depending on soil conditions.

Aquifers in the BRRTP area are generally unconfined, and depths of water-bearing formations exceed the distance required for foundations and footings. While there is potential for groundwater to be encountered during auguring activities along certain Alternatives, dewatering activities are unlikely to deplete groundwater supplies. Construction, operation, maintenance, and decommissioning of the Proposed Action or an Alternative would not interfere with groundwater recharge or otherwise lower the levels of local groundwater tables.

Placement of housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

No Impact. Construction of the Proposed Action or an Alternatives would not involve the placement of housing within a 100-year flood hazard area.

Exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

No Impact. Although portions of Alternative 1 would be adjacent to Castaic Reservoir, structures for the transmission line would be sited so that the line would either span the area of hazard or be placed on a ridge above the dam. Construction and operation of the Proposed Action or an Alternative would not cause or increase the likelihood of failure of a levee or dam that could result in flooding. As such, the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding resulting from the failure of a levee or dam.

No Action Alternative

Under the No Action Alternative, the construction of a new 230 kV transmission line, the addition of a new circuit, the upgrade of the existing BR-RIN transmission line, the construction of a new Haskell Canyon Switching Station, and the expansion of the existing Barren Ridge Switching Station would not occur.

With the No Action Alternative, no Project-related ground disturbance would occur. While Project-related construction and ground disturbance of the Proposed Action or any Alternative would result in negligible to moderate impacts to hydrology, water quality, and wetlands, the No Action Alternative would result in no such impacts. If the No Action Alternative is selected, hydrology, water quality, and wetlands within the Project area would remain as they were when this analysis was conducted.

Alternative 1

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station.

Expansion of Barren Ridge Switching Station
The existing switching station would be expanded to create a permanent ground disturbance area of 5.6 acres. While there are no water resource features on the site, expansion of the Barren Ridge Switching Station would have the potential to impact water resources off-site, including Pine Tree Canyon Creek, 0.5 mile south of the switching station. Potential direct adverse effects of expansion, operation, and maintenance of the Barren Ridge Switching Station would include creation of new sources of polluted storm water runoff. Indirect adverse effects would include production of siltation or erosion offsite, or generation of flooding, resulting from alteration of existing drainage patterns.

New Haskell Canyon Switching Station
The proposed switching station would result in a permanent ground disturbance of 19.4 acres. Direct adverse effects that would potentially result from construction, operation, maintenance, and decommissioning of the proposed Haskell Canyon Switching Station would include creation of new sources of polluted stormwater runoff. Indirect adverse effects would include production

of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

Reconductor Existing 230 kV Transmission Line

The reconductoring of the existing 230 kV transmission line would require modification or replacement of some existing towers, and/or some tower foundations may require reinforcement or replacement. Potential impacts resulting from upgrade of the existing 230 kV transmission line would be related to ground-disturbing activities such as those required for improvement of existing access and spur roads, clearing of the ROW, conductor installation, and cleanup. Potential direct impacts resulting from construction, operation, maintenance, and decommissioning of reconductoring the existing 230 kV transmission line would include creation of new sources of polluted stormwater runoff; impacting federal protected wetlands through direct removal, filling, hydrological interruption, or other means; and placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

Addition of New 230 kV Circuit

The addition of the new transmission line would require many of the same construction activities associated with a new transmission line; however, all work would occur within the existing ROW and no new towers would be constructed. Some roads may need clearing or improvement to allow safe access of construction vehicles. Potential impacts resulting from addition of a new 230 kV circuit would be limited to ground-disturbing activities such as those required for improvement of existing access and spur roads, clearing of the ROW, conductor installation, and cleanup. Potential direct impacts resulting from construction, operation, maintenance, and decommissioning of the additional 230 kV circuit would include placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 1 transmission line as well as on the direct and indirect effects of Alternative 1, including the common Project components and the Alternative 1 transmission line, as noted.

Construction of the Alternative 1 230 kV double-circuit transmission line would result in a temporary ground disturbance of 575.6 acres and an average permanent ground disturbance of 159.8 acres. Many of the potential direct and indirect effects would be related to ground-disturbing activities. Direct adverse effects that would potentially result from construction, operation, maintenance, and decommissioning of the Alternative 1 transmission line would include creation of new sources of polluted stormwater runoff, and placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

While the Antelope Valley portion of the Alternative 1 transmission line would cross multiple intermittent streams and floodplains, the terrain is relatively flat and existing roads would be utilized for the majority of required access. Ground disturbance would be low, limited to crushing or blading of vegetation where required for work areas.

The southern portion of the Alternative 1 transmission line also would cross multiple intermittent streams and several floodplains. Where this transmission line would enter the mountains and the ANF, it would cross relatively steep terrain and areas where few roads exist. Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in currently roadless areas, increasing the risk of erosion and sedimentation downstream of disturbance areas; however, utilization of helicopters for construction within the steeper areas would decrease impacts resulting from erosion and sedimentation.

CEQA Significance
After implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, HYD-7, and HELICOPTER, impacts resulting from construction of Alternative 1, including the common Project components and the Alternative 1 transmission line, would be less than significant; thus, overall potential impacts to water resources resulting from construction of Alternative 1 would be less than significant.

Alternative 2

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2 transmission line as well as on the direct and indirect effects of Alternative 2, including the common Project components and the Alternative 2 transmission line, as noted.

Construction of the Alternative 2 transmission line would result in an average temporary ground disturbance of 398 acres and an average permanent ground disturbance of 63.4 acres. As with the Alternative 1 transmission line, many of the potential direct and indirect effects would be related to ground-disturbing activities. Direct adverse effects that would potentially result from construction, operation, maintenance, and decommissioning of the Alternative 2 transmission line would include creation of new sources of polluted stormwater runoff; impacting federal protected wetlands through direct removal, filling, hydrological interruption, or other means; and placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

The Antelope Valley portion of the Alternative 2 transmission line would cross multiple intermittent streams and floodplains; however, the terrain is relatively flat and existing roads would be utilized for the majority of required access. Ground disturbance would be minimal, limited to crushing or blading of vegetation where required for work areas.

As the Alternative 2 transmission line would cross Portal Ridge and enter the ANF, it would cross numerous intermittent streams and several floodplains associated with some of the larger canyons. This southern portion also would cross relatively steep terrain in relatively roadless areas. Existing roads would have to be improved to allow for safe construction access and new roads would be constructed in areas where no roads currently exist, increasing potential for erosion and sedimentation in areas downstream of disturbance areas.

Temporary Transmission Line

The temporary transmission line associated with the Alternative 2 transmission line would cross five intermittent streams, but these streams would be spanned by the line and would not be impacted by placement of temporary poles. No National Wetland Inventory (NWI) wetlands would crossed by the temporary transmission line, but this line would cross or parallel six RCAs. This line would parallel roadways, and thus would be sited on slopes that are generally mild. Potential direct adverse effects resulting from construction and eventual removal of the temporary transmission line would include degradation of water quality, primarily thorough siltation, and placement of structures in a 100-year floodplain. Potential indirect adverse effects would include production of siltation or erosion offsite, or generation of flooding, resulting from alteration of existing drainage patterns.

CEQA Significance

With implementation of mitigation measures, potential impacts in the Antelope Valley portion of this Alternative would be less than significant. Although potential impacts in the southern section of this Alternative are somewhat greater, implementation of mitigation measures would reduce impacts resulting from construction and operation of this southern section to less than significant. With implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, and HYD-6, impacts resulting from construction, operation, and removal of the temporary transmission line would be less than significant. Overall, potential impacts resulting from Alternative 2, including the common Project components and the Alternative 2 transmission line would be less than significant with mitigation.

Alternative 2a

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 2a transmission line as well as on the direct and indirect effects of Alternative 2a, including the common Project components and the Alternative 2a transmission line, as noted.

Construction of the Alternative 2a transmission line would result in an average temporary ground disturbance of 406.9 acres, and an average permanent ground disturbance of 66.8 acres. Due to the overall similarity between the transmission line of Alternative 2a to Alternative 2, potential direct and indirect effects would be generally the same as those of the Alternative 2 transmission line. Construction, operation, maintenance, and decommissioning of the Alternative 2a transmission line would therefore have direct potential adverse effects of creation of new sources of polluted stormwater runoff; impacting federal protected wetlands through direct removal, filling, hydrological interruption, or other means; and placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

Given that the reroute that defines the Alternative 2a transmission line is the only difference between transmission lines of Alternative 2a and Alternative 2, only that reroute shall be discussed here. The Alternative 2a transmission line reroute would cross five intermittent streams and several RCAs, and over half of this reroute would be on steep slopes of greater than 30 percent; in addition, this reroute would be in areas with few existing roads which would necessitate the improvement or construction of roads to allow for safe construction access. Utilization of helicopters for construction within the steeper areas would decrease impacts resulting from erosion and sedimentation.

Temporary Transmission Line

The temporary transmission line associated with Alternative 2a would be identical to that described in Alternative 2; likewise, associated impacts would be identical, and would include potential direct adverse effects resulting from construction and eventual removal of the temporary transmission line, including degradation of water quality, primarily thorough siltation, and placement of structures in a 100-year floodplain. Potential indirect adverse effects would include production of siltation or erosion offsite, or generation of flooding, resulting from alteration of existing drainage patterns.

CEQA Significance

With implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, and HELICOPTER, impacts resulting from construction and operation of the Alternative 2a transmission line would be less than significant; overall potential impacts resulting from Alternative 2a, including the common Project components and the Alternative 2a transmission line, would be less than significant.

Alternative 3

Project Components Common to All Action Alternatives

As described in Chapter 2 of this Final EIS/EIR, the following Project components would be the same for each action Alternative: new 230 kV circuit, reconductoring of BR-RIN transmission line, new Haskell Switching Station, and expansion of the Barren Ridge Switching Station. Refer to Alternative 1 for a full discussion of the common project components.

New 230 kV Double-Circuit Transmission Line

As described in Chapter 2 of this Final EIS/EIR, the route of the new 230 kV double-circuit transmission line would be different for each Alternative. The discussion below includes information on the direct and indirect effects of the Alternative 3 transmission line as well as on the direct and indirect effects of Alternative 3, including the common Project components and the Alternative 3 transmission line, as noted.

Construction of the Alternative 3 transmission line would result in an average temporary ground disturbance of 515.7 acres and an average permanent ground disturbance of 113.1 acres. As with the transmission lines of the previous Alternatives, many of the potential direct and indirect effects would be related to ground-disturbing activities. Direct adverse effects that would potentially result from construction, operation, maintenance, and decommissioning of the Alternative 3 transmission line would include creation of new sources of polluted stormwater runoff; and placement of structures within a 100-year floodplain, which would impede or redirect flood flows. Indirect adverse effects would include production of siltation or erosion off-site, or generation of flooding, resulting from alteration of existing drainage patterns.

While the Antelope Valley portion of the Alternative 3 transmission line would cross multiple intermittent streams and floodplains, the terrain is relatively flat and existing roads would be utilized for the majority of required access. Ground disturbance would be minimal, limited to crushing or blading of vegetation where required for work areas.

The southern portion of the Alternative 3 transmission line also would cross multiple intermittent streams and several small floodplains. Once the Alternative 3 transmission line would cross Ritter Ridge and enter the mountains, it would cross relatively steep terrain, including slopes of greater than 30 percent. While existing roads would be utilized for construction access throughout this transmission line, many roads would require improvement to allow for safe construction access, increasing the risk of erosion and sedimentation downstream of disturbance areas.

CEQA Significance
With implementation of mitigation measures HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, and HELICOPTER, potential impacts resulting from construction and operation of Alternative 3, including the common Project components and the Alternative 3 transmission line, would be less than significant.

Comparison of Alternatives

All Alternatives would cross through a portion of the Antelope Valley where slopes are relatively flat and existing roads would be utilized for construction. Within the Antelope Valley, therefore, the four action Alternatives and their adverse effects would be similar in magnitude. The dissimilarities begin when the double-circuit transmission line of each Alternative would enter the mountains and the ANF, where access may be an issue and where the greater length of the transmission line of an Alternative may result in an increased magnitude of impacts because of an increase in quantity.

The Alternative 1 transmission line is the longest transmission line among the Alternatives, measuring 83 miles, although the Alternative 3 transmission line measures 76 miles in length. By contrast, the Alternative 2 transmission line and the Alternative 2a transmission line measure 61 and 63 miles in length, respectively. As the longest transmission line among the Alternatives, stream crossings of the Alternative 1 transmission line would be greater than that of the other transmission lines: the Alternative 1 transmission line would have 146 stream crossings, the Alternative 2 transmission line would have 78, the Alternative 2a transmission line would have 79, and the Alternative 3 transmission line would have 92.

The Alternative 1 transmission line also would cross the most miles of slopes over 20 percent, with 24.6 miles. The Alternative 3 transmission line would cross 19.8 miles of slopes greater than 20 percent, and The transmission lines of Alternatives 2 and 2a would cross 13.2 miles and 15.7 miles, respectively.

Increased length, combined with an increased amount of steep slopes, drives the major differences in impact intensity, especially in areas where new roads would be required, or where existing roads would need to be improved. Just as the level of magnitude of potential impacts increases with increased sensitivity of the resource, the impact magnitude also increases with slope. The potential for erosion and related impacts is greatest on steep slopes; therefore, impact levels related to erosion would be higher on steep slopes than on relatively flat slopes. For this reason, the initial similarities between the Antelope Valley portions of the transmission lines for each Alternative are counteracted by their length and slopes.

The Alternative 1 transmission line, being the longest transmission line among the Alternatives, would cross the most steep slopes and have the greater number of stream crossings. While impacts resulting from the Alternative 1 transmission line would be less than significant, primarily as a result of utilization of helicopters for construction in the steep and roadless areas, the greater length of the Alternative 1 transmission line would still result in a greater amount of erosion, and erosion-related impacts, than the other transmission lines. Likewise, while the impact level associated with the Alternative 3 transmission line is less than significant, the quantity of impacts would be greater as a result of its length.

Alternative 2 and Alternative 2a would each result in fewer impacts because the transmission lines of these Alternatives would be shorter, have fewer stream crossings, and cross fewer miles of steep slopes. While the differences between these two Alternatives seem minor, the greater number of steep slopes that would be crossed by the Alternative 2a transmission line would result in a greater amount of erosion-related impacts than the Alternative 2 transmission line. When length of transmission line, resource sensitivity, slopes, and mitigation measures are taken into consideration, Alternative 2 would result in fewer adverse effects than Alternatives 1, 2a or 3.

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CHAPTER 5: CUMULATIVE EFFECTS

5.1 INTRODUCTION

Cumulative effects are those effects that would result from incremental impacts of the Proposed Action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

Cumulative effects analysis is required under NEPA, and similarly an analysis of cumulative impacts is required under CEQA. The BRRTP cumulative effects/impacts analysis focuses on the natural resources, ecosystems, and social or human communities that could be affected by the incremental impacts of the Project Alternatives. This analysis builds on the direct and indirect effects of the Proposed Action and Alternatives described in Chapter 2 of this Final EIS/EIR. The approach to the cumulative effects analysis follows the principles outlined in the Council on Environmental Quality's (CEQ) "Considering Cumulative Impacts" (1997), the guidance developed in the U.S. Environmental Protection Agency (EPA), Office of Federal Activities' "Consideration of Cumulative Impacts in EPA Review of NEPA Documents" (1999), and CEQA Statutes and Guidelines (as amended).

5.1.1 METHODOLOGY

The development of the cumulative effects assessment presented in this Chapter generally followed the methodological steps outlined below:

Step 1: Define alternatives for the EIS/EIR. The Proposed Action and Alternatives are described in Chapter 2 of this Final EIS/EIR.

Step 2: Define Impact Areas. Impact Areas are defined and evaluated with respect to each of the resources. Impact areas vary from one resource to another, as the affected region under each resource is likely to be different in spatial extent. In some cases, the Impact Area corresponds with the impact corridor, generally a 500-foot corridor, as defined for individual resources in Chapter 4.

Step 3: Define Present and Reasonably Foreseeable Actions. A list of present and reasonably foreseeable actions is developed from consultations with government agencies and nongovernmental organizations, through public scoping, and in consultation with knowledgeable private entities. These actions include projects, activities, and trends that could impact the human and environmental resources within each impact area.

In order to understand the contribution of past actions to the cumulative effects of the Proposed Action and Alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the Proposed Action or Alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this Project did not identify any public interest or need for detailed information on individual past actions. For these reasons, the analysis of past actions in this section is based on current environmental conditions, as described for each resource in Chapter 3 of this Final EIS/EIR, and the developed lists of actions are limited to present and reasonably foreseeable future actions.

Step 4: Incorporate the Direct and Indirect Impacts. Direct and indirect impacts developed and evaluated elsewhere in this Final EIS/EIR are incorporated into the cumulative effects assessment. Direct impacts are caused by implementing the Proposed Action or an Alternative, and occur at the same time and place as the proposed Project. Indirect impacts are caused by the Proposed Action or an Alternative, but occur later in time or farther removed in distance and are still reasonably foreseeable.

Step 5: Determine the Potential Impacting Factors of Each Present or Reasonably Foreseeable Action or Activity. For each action identified in Step 3, a description of the potential impacting factors is developed. Impacting factors are the mechanisms by which an action affects a given resource. Each impacting factor may be a component of more than one action or activity.

Step 6: Evaluate Cumulative Effects. An evaluation of the cumulative effects is conducted for each resource. The individual evaluations consider the unique impacting factors for the various resources and the incremental contribution of the Proposed Action to the cumulative effect.

The following factors are used to judge the cumulative impact on a resource:

- Nature of the impact,
- Geographic or spatial extent of the potential impacting factor,

- Geographic or spatial extent of the resource,
- Temporal extent of the potential impacting factor,
- Regulatory considerations (e.g., Threatened and Endangered Species),
- Potential for effective mitigation of the impact, and
- Potential for recovery of the resource after removal of the impacting factor.

Step 7: Present the Cumulative Effects Analysis. The cumulative effects for each resource are described in Section 5.3 of this Chapter.

Conclusions presented in the cumulative effects analysis discussions regarding the significance of identified impacts are provided for the purposes of CEQA only, as significance conclusions are not required for compliance with NEPA. A “cumulatively considerable” impact would occur when the incremental impacts of an individual project are significant when viewed in connection with the impacts of past, current, and probable future projects pursuant to CEQA.

5.2 CUMULATIVE PROJECT LIST – MAJOR PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

The cumulative projects list is used to provide a general context for the cumulative effects analysis and as a basis for the development of resource-specific lists of present and reasonably foreseeable future actions. This list includes present and reasonably foreseeable future actions in the vicinity of the Project that have the potential to combine with the Proposed Action or Alternatives. April 2008, the commencement of environmental review under CEQA or NEPA, has been utilized as the threshold for a given action to be considered a present or reasonably foreseeable future action. While a distinct impact area for cumulative impacts, and specific present and reasonably foreseeable actions, is determined individually for each resource, as detailed in Section 5.3 of this Final EIS/EIR, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area, and are current as of March 2012. The Cumulative Projects Map (Figure 5-1) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project. The list was developed in consultation with the following agencies:

USFS – Angeles National Forest (ANF)
BLM – Palm Springs Field Office
Kern County – Planning Department
City of California City
City of Palmdale
City of Los Angeles
LADWP
BLM – Ridgecrest Field Office
United States Air Force – Edwards Air Force Base
Los Angeles County – Department of Regional Planning
City of Lancaster
City of Santa Clarita
City of San Fernando

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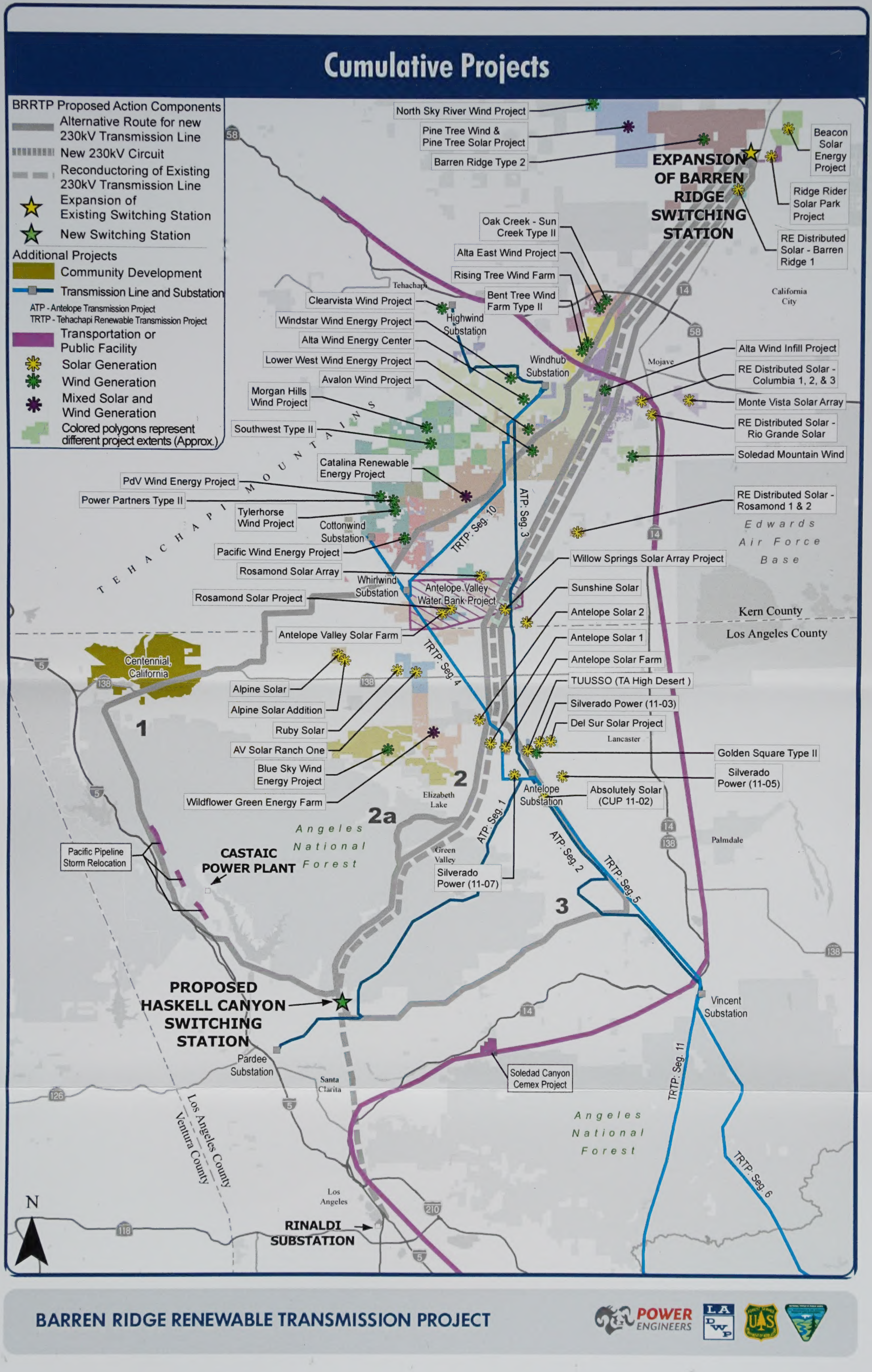
FIGURE 5-1. CUMULATIVE PROJECTS


Cumulative Projects
BRRTP Proposed Action Components
Alternative Route for new 230kV Transmission Line
New 230kV Circuit
Reconductoring of Existing 230kV Transmission Line
Expansion of Existing Switching Station
New Switching Station
Additional Projects
Community Development
Transmission Line and Substation
ATP - Antelope Transmission Project
TRTP - Tehachapi Renewable Transmission Project
Transportation or Public Facility
Solar Generation
Wind Generation
Mixed Solar and Wind Generation
Colored polygons represent different project extents (Approx.)
North Sky River Wind Project
Pine Tree Wind & Pine Tree Solar Project
Barren Ridge Type 2
EXPANSION OF BARREN RIDGE SWITCHING STATION
Beacon Solar Energy Project
Ridge Rider Solar Park Project
RE Distributed Solar - Barren Ridge 1
Oak Creek - Sun Creek Type II
Alta East Wind Project
Rising Tree Wind Farm
Bent Tree Wind Farm Type II
Clearvista Wind Project
Windstar Wind Energy Project
Alta Wind Energy Center
Lower West Wind Energy Project
Avalon Wind Project
Morgan Hills Wind Project
Southwest Type II
Highwind Substation
Windhub Substation
Tehachapi
California City
Mojave
Alta Wind Infill Project
RE Distributed Solar - Columbia 1, 2, & 3
Monte Vista Solar Array
RE Distributed Solar - Rio Grande Solar
Soledad Mountain Wind
Catalina Renewable Energy Project
PdV Wind Energy Project
Power Partners Type II
Tylerhorse Wind Project
Cottonwind Substation
Pacific Wind Energy Project
Rosamond Solar Array
Rosamond Solar Project
Whirlwind Substation
Antelope Valley Water Bank Project
TEHACHAPI MOUNTAINS
ATP: Seg. 3
TRTP: Seg. 10
RE Distributed Solar - Rosamond 1 & 2
Edwards Air Force Base
Willow Springs Solar Array Project
Sunshine Solar
Antelope Solar 2
Antelope Solar 1
Antelope Solar Farm
TUUSSO (TA High Desert)
Silverado Power (11-03)
Del Sur Solar Project
Kern County
Los Angeles County
Antelope Valley Solar Farm
Centennial, California
TRTP: Seg. 4
Alpine Solar
Alpine Solar Addition
Ruby Solar
AV Solar Ranch One
Blue Sky Wind Energy Project
Wildflower Green Energy Farm
1
2
2a
3
Lancaster
Golden Square Type II
Silverado Power (11-05)
Antelope Substation
Absolutely Solar (CUP 11-02)
Elizabeth Lake
Palmdale
Pacific Pipeline Storm Relocation
CASTAIC POWER PLANT
Angeles National Forest
Green Valley
Silverado Power (11-07)
ATP: Seg. 1
ATP: Seg. 2
TRTP: Seg. 5
PROPOSED HASKELL CANYON SWITCHING STATION
Pardee Substation
Santa Clarita
Vincent Substation
Soledad Canyon Cemex Project
TRTP: Seg. 11
TRTP: Seg. 6
Los Angeles County
Ventura County
Los Angeles
RINALDI SUBSTATION
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58
14
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126
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118
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS
LA DWP

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5.2.1 ENERGY INFRASTRUCTURE PROJECTS

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison's (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE's existing Antelope Substation in the city of Lancaster and SCE's existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE's existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 megawatts (MW) and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:

- Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);
- Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);
- Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);
- Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);
- Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);
- Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);
- Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);
- Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);
- Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);
- Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);
- Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and
- Installing associated telecommunications infrastructure.

Generation Projects

Numerous wind and solar generation projects are in various stages of planning and development within the vicinity of the Project. Projects considered include reasonable foreseeable projects currently undergoing environmental review or recently approved and present projects that are under construction as of March 2012. Table 5-1 below summarizes the major known projects and their current status as of March 2012 (County of Kern Environmental Documents and AV Solar Ranch One).

TABLE 5-1. PROPOSED GENERATION PROJECTS IN THE VICINITY OF THE PROJECT

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Absolutely Solar CUP 11-02	Solar	3.4 MW	18	City of Lancaster	Planning Commission Approved Sept. 2011
Alpine Solar	Solar Photovoltaic	92 MW	800	Los Angeles County	Approved by Los Angeles County Oct. 2011
Alpine Solar Addition	Solar Photovoltaic	No additional MW	35	Los Angeles County	Approved
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Notice of Preparation of Draft EIS/EIR filed July 2011
Alta Wind Energy Center: Alta-Oak Creek Mojave Project; Alta Addendum I; Alta Addendum II	Wind Turbine	800 MW; No additional MW; 330	9,175; 1; 4,610	Kern County	Approved by Kern County Dec. 2009; Approved by Kern County June 2010; Approved by Kern County Dec 2010
Alta Wind Infill II Project	Wind	530 MW	5,185	Kern County	Approved by Kern County Oct. 2011
Antelope Solar 1	Solar Photovoltaic	10 MW	111	Los Angeles County	Early Environmental Review
Antelope Solar 2	Solar Photovoltaic	10 MW	80	Los Angeles County	Early Environmental Review
Antelope Solar Farm	Solar Photovoltaic	20 MW	320	Los Angeles County	Early Environmental Review
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	4,642	Kern County/ Los Angeles County	Approved March 2012
AV Solar Ranch One	Solar Photovoltaic	230 MW	2,100	Los Angeles County	Approved by Los Angeles County in Sept. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010; Request for Proposal underway
Barren Ridge Type II	Wind	Unknown	10,665	T310S R360E & 370E	Project authorized for testing; NEPA Analysis approved; ROW grant issued

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010; DEIR anticipated 2nd quarter 2012
Bent Tree Wind Farm Type II	Wind	Unknown	528	Kern County	Project authorized for testing; NEPA Analysis approved; ROW grant issued
Blue Sky Wind Energy	Wind Turbine	225 MW	7,500	Los Angeles County	Notice of Preparation for a Draft EIR filed Sept. 2011
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW (Wind: 200; Solar: 150)	7,440	Kern County	Approved by Kern County Dec. 2011
Clearvista Wind Project	Wind Turbine	20 MW	226	Kern County	Approved by Kern County Sept. 2011
Del Sur Solar Project CUP 10-22	Solar	39 MW	180	City of Lancaster	Planning Commission Approved February 2011
Edwards Air Force Base Solar Project	Solar	Unknown	3,288	Kern County	Lease execution anticipated 2012
Golden Square Type II	Wind	Unknown	584	Kern County	Project authorized for testing; ROW grant issued; Compliance check for tower placement completed
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Final EIR released June 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Approved by Kern County Oct. 2011
North Sky River Wind Project	Wind Turbine	300 MW	12,781	Kern County	Approved by Kern County Sept. 2011
Oak Creek/Sun Creek Type II	Wind	Unknown	1,546	T350S R320E	Project authorized for testing; NEPA analysis approved; ROW grant issued

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Pacific Wind Energy Project; Pacific Wind Addendum	Wind Turbine	151 MW	8,300; 1,325	Kern County	Approved by Kern County Oct. 2010; Approved by Kern County April 2011
PdV Wind Energy Project; PdV Addendum	Wind Turbine	300 MW	5,820; 2,423	Kern County	Approved by Kern County July 2008; Approved by Kern County March 2010
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Completed
Power Partners Type II	Wind	Unknown	1,530	T100N R150W	Project authorized for testing; NEPA analysis approved; ROW grant issued
RE Distributed Solar Project	Solar Photovoltaic	174 MW	2,048	Kern County	Approved by Kern County Dec. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	285 MW	3,278	Kern County	Notice of Preparation/Notice of Intent of a Draft EIS/EIR filed July 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Ruby Solar	Solar Photovoltaic	20 MW	160	Los Angeles County	Early Environmental Review
Silverado Power CUP 11-03	Solar	10 MW	67	City of Lancaster	Planning Commission Approved Sept. 2011
Silverado Power CUP 11-05	Solar	20 MW	80	City of Lancaster	Planning Commission Approved September 2011
Silverado Power CUP 11-07	Solar	30 MW	160	City of Lancaster	On Hold

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Soledad Mountain Wind	Wind	Unknown	1,228	Kern County	Project authorized for testing; NEPA analysis approved; ROW grant issued
Southwest Type II	Wind	Unknown	7,245	Kern County	Project authorized for testing; NEPA analysis approved; ROW grant issued
Sunshine Solar	Solar	40 MW	319	Kern County	Application to Kern County deemed complete in Sept. 2010
TUUSS0 Solar Project CUP 10-03	Solar	20 MW	216	City of Lancaster	Planning Commission Approved June 2010
Tylerhorse Wind Project	Wind Turbine	60 MW	1,100	Kern County	Notice of Intent to prepare a EIS filed July 2011
Wildflower Green Energy Farm	Wind Turbine & Solar Photovoltaic	300 MW	3,708	Los Angeles County	Notice of Extension of Comment Period for Notice of Preparation of Draft EIR Nov. 2011
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project; Windstar Addendum I	Wind Turbine	65 MW	1,007; 1	Kern County	Approved by Kern County April 2009; Approved by Kern County July 2010

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the vicinity of the Project. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the vicinity of the Project submitted to BLM's Ridgecrest Field Office as of March 2012 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).

TABLE 5-2. BLM RIDGECREST OFFICE APPLICATIONS FOR WIND AND SOLAR ENERGY GENERATION PROJECTS IN THE VICINITY OF THE PROJECT

Serial Number	Applicant	Date Application Received/ ROW Grant Issued/ Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 45386	Little Lake South Renewables, LLC	12/11/02	8,835	Wind: Pending for testing	Rose Valley/Little Lake
CACA 48537	Oak Creek Energy Systems, Inc.	6/25/06	9,279	Wind: Pending for testing	Rand Mountain
CACA 49577	Power Partners SW (enXco)	8/10/07; NOD 8/2/10	276	Wind: Pending for testing	Soledad area
CACA 50171	AES Seawest, Inc.	7/3/08	139	Wind: Pending for testing	Kern County
CACA 51454	Jawbone Canyon Power Partners	11/26/2009	47,226	Wind: Pending for testing	Jawbone Canyon
CACA 51561	Power Partners Southwest, LLC	12/11/09	1,200	Wind: Pending for development	Kern County
CACA 52309	enXco Development	3/19/10	275	Wind: Pending for testing	Tehachapi area, Kern County
CACA 52362	Rising Tree Wind, LLC	7/31/10	540	Wind: Pending for development	Golden Square
CACA 52537	Terra Gen	5/11/10	3,200	Wind: Pending for development	SE Kern County
CACA 52841	Tehachapi Wind Energy, LLC	3/31/11	1,000	Wind: Pending for testing	T270S & 280S R350E, T280S R360E &370E, T290S R370E
CACA 52842	Celtic Energy Corp.	5/6/11	5,256	Wind: Pending for testing	T320S R350E, 360E & 370E
CACA 52843	Ridgeline Power, LLC	3/30/11	1,158	Wind: Pending for testing	T50N R120W & 130W
CACA 52844	Ridgeline Power, LLC	3/30/11	10,029	Wind: Pending for testing	T50S & 60S R70E
CACA 52845	Ridgeline Power, LLC	3/30/11	1,444	Wind: Pending for testing	T90N R130w; T100N R130W
CACA 52848	Pacific Wind Development, LLC	3/20/11	1,000	Wind: Pending for testing	T280S R400E
CACA 53148	Ridgeline Power, LLC	7/8/11	3,164	Wind: Pending for testing	T270S R390E; T280S R390E
CACA 53158	Ridgeline Power, LLC	7/11/11	4,500	Wind: Pending for testing	T280S R410E

Note: Projects previously under application, and subsequently authorized, have been moved to Table 5-1.

5.2.2 OTHER MAJOR PROJECTS

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

Pacific Pipeline Storm Relocation Project and Access Road Repairs – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation took place in November 2010 and was completed effective December 2011 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Antelope Valley Water Bank Project – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

Soledad Canyon Cemex Project – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

Community Development

Centennial Project – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

Maintenance and Landscape Management Projects

Bouquet Canyon Road Realignment – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (J. Seastrand personal communication 2010).

San Francisquito Road Rehabilitation and Sediment Disposal Site – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in

September 2010, but currently the decision is on hold (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Old Ridge Route Storm Damage Repair – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project was expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Livestock Grazing Allotments – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10-year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions. The majority of the livestock are sheep. The number of sheep average around thirty thousand head. Three of the allotments support several thousand head of cattle (G. Harris personal communication 2010).

Tule Ridge/South Portal Fuels Reduction Project – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to the unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds. A decision on the project is expected in August, 2011 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

Jupiter Fuelbreak Project – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

Santa Clara/Mojave River Rangers District Plantation Maintenance Project – The proposed project would consist of vegetation maintenance at 13 plantations units located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010, and project implementation is on-going (T. Hernandez personal communication 2011).

Lake Hughes Plantation Restoration Project – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010. Project implementation has been completed, and the project is being monitored for success (T. Hernandez personal communication 2011).

Bouquet and San Francisquito Habitat Improvement Project – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (J. Seastrand personal communication 2010).

5.2.3 LOCAL PROJECTS

In conjunction with the major projects listed above, a summary of local foreseeable projects within the impact area that could contribute to cumulative effects are summarized in the table below. These reasonably foreseeable projects were gathered from applications to the planning departments of the various jurisdictions and have been categorized by project type.

TABLE 5-3. PROPOSED LOCAL PROJECTS IN THE VICINITY OF THE PROJECT

	Kern County	Los Angeles County[1]	City of California City	City of Palmdale[2]	City of Lancaster	City of Santa Clarita	City of Los Angeles	City of San Fernando
Single Family Residential (may include multiple units)	1	96	0	14	93	10	2	2
Multi Family Residential (may include multiple units)	28	9	0	9	2	1	2	1
Schools	2	2	0	9	2	0	0	0
Religious Uses	10	7	0	13	0	0	1	1
Recreational Facilities	7	5	0	7	1	0	0	1
Public Facilities – police, fire, library, correctional	2	5	0	4	0	0	0	0
Commercial/ Office Development	40	33	0	96	6	21	2	7
Hotels/Motels	1	0	0	9	2	1	1	2
Medical/Care Facilities	4	6	0	16	0	1	0	1
Industrial Facilities	20	0	0	17	1	6	2	2
Mining Operations	15	0	0	4	0	0	0	0
RV Facilities	2	0	0	0	0	0	0	0
Animal Facilities	8	6	0	1	0	0	0	0
Aviation Facilities	2	0	0	0	0	0	0	0
Non-Commercial Energy Facilities	1	2	0	0	0	0	0	0

[1] Projects listed for Los Angeles County include all projects that could contribute to cumulative effects within the following County Districts: Antelope Valley West, Bouquet Canyon, Castaic Canyon, Chatsworth, Lancaster, Leona Valley, Mount Gleason, Newhall, North Palmdale, Palmdale, Quartz Hill, Sand Canyon, Soledad. Some identified projects included may be outside of the impact area.

[2] Projects listed for the City of Palmdale include all projects that could contribute to cumulative effects within the City. Some identified projects included may be outside of the impact area.

5.2.4 PLANNING AND ENVIRONMENTAL DOCUMENTS

To supplement the cumulative projects list and the general understanding of the vicinity of the Project, the documents listed below were used to provide insight into longer-term expectations regarding future development and ultimate build-out scenarios and timelines which are used to inform the cumulative analysis.

- Federal
  - USFS – US Forest Service Manual Section 2700
  - USFS – Angeles National Forest Land Management Plan
  - USFS – Pacific Crest Trail Management Plan
  - USFS and BLM – West-wide Energy Corridor Programmatic EIS

  - BLM – The California Desert Conservation Area Plan and Amendments, including the West Mojave Plan
  - BLM – Wind Energy Development Programmatic EIS
  - BLM – Geothermal Leasing Programmatic EIS
  - US Department of Energy and BLM – Designation of Energy Corridors on Federal Land in the 11 Western States
  - United States Department of Defense – China Lake Naval Air Weapons Station Comprehensive Land Use Management Plan
  - United States Department of Defense – Edwards Air Force Base General Plan
  - United States Department of Defense – Fort Irwin / National Training Center Real Property Master Plan

- State
  - Renewable Energy Transmission Initiative (RETI)
    - Phase 1A Final Report
    - Phase 1B Final Report
    - Phase 2a Final Report and Appendices
  - California Department of Education – School Site Selection and Approval Guide
  - California Department of Parks and Recreation – Outdoor Recreation Plan
  - California Department of Parks and Recreation – Antelope Valley California Poppy Reserve, Resource Management Plan, General Development Plan and Environmental Report

- Regional/Local
  - Southern California Association of Governments – Regional Comprehensive Plan and Guide
  - Kern County – General Plan
  - Kern County – Airport Land Use Compatibility Plan
  - Los Angeles County – General Plan
  - Los Angeles County – Airport Land Use Compatibility Plan
  - Antelope Valley Areawide General Plan
  - Santa Clarita Valley Area Plan
  - City of Lancaster General Plan
  - City of Los Angeles General Plan
  - City of Palmdale General Plan
  - City of San Fernando General Plan
  - City of Santa Clarita General Plan
  - Mojave Specific Plan
  - Soledad Mountain Specific Plan
  - Ancient Valley Specific Plan
  - Willow Springs Specific Plan
  - Del Sur Ranch Development
  - Joshua Ranch Specific Plan
  - Ritter Ranch Specific Plan
  - City Ranch Specific Plan (Anaverde Specific Plan)

5.2.5 POTENTIAL MITIGATION FOR SIGNIFICANT CUMULATIVE IMPACTS

Reasonably foreseeable wind and solar projects that might transmit power through the BRRTP would have similar impacts, particularly those projects in the Antelope Valley and other locations north of the ANF; as such, the types of impacts that would likely result from construction and operation of such projects and possible mitigation outside the jurisdictions of the lead agencies have been identified.

Wind project impacts would typically occur as follows:

- Avian impacts occur to birds and bats. Of concern are raptors, including golden eagles and bald eagles, a variety of hawks, and other species. Avian studies conducted prior to wind farm construction typically would determine the likely intensity of potential impacts. Bats are also a concern for wind projects.
- Habitat loss occurs when wind projects are constructed. Roads and turbine pads are permanent fixtures on the landscape.
- Visual impacts to nearby residences, communities, roadways, and recreation areas are an issue with a typical 100 MW wind project having between 30 and 75 turbines, each well over 300 feet in height. The moving blades also bring the additional element of movement into view, and this is sometimes exacerbated with shadow flicker, a phenomenon caused from light and shadows crossing sensitive views.
- Land uses are sometimes altered or affected by wind projects. Many wind farms are located in agricultural lands where a certain amount of production is removed by the footprints of the turbine pads, roads, and ancillary facilities.
- Cultural resources, including Native American concerns, can be impacted by wind projects, and the primary form of mitigation is siting to avoid cultural resources.
- Noise and interference can also be impacts from wind farms.

Similarly, solar projects typically would result in the following impacts:

- Large areas of ground disturbance typically result from solar projects. For this summary, we have described the common impacts of a typical photovoltaic solar project. Panels cover hundreds to thousands of acres, and service roads lie between the panel arrays. While ground disturbance is normally limited in solar panel arrays, panels shade the ground below, which changes the way that animals and plants occupy the land. Road areas are permanent loss of vegetation and habitat.
- Habitat loss is an issue, since solar projects cover such enormous acreages of land. How animals use the area changes after construction, and the way that wide-ranging or migrating animals cross through the area changes for the life of the project.
- Visual impacts are a concern both in terms of the amount of natural landscape covered, changed, and seen from sensitive viewpoints, and from potential glint and glare issues from the reflectivity of the sun off the glass panels. This is typically a concern for safety on nearby highways, and can possibly even be a concern for aviation.
- Water use is an issue, since the panels must be cleaned on a regular basis for maximum efficiency in the conversion of sunlight to electricity.

Possible mitigation that may be outside the jurisdiction of the lead agencies could include:

- Phasing project construction schedules,
- Establishing a Multiple Species Habitat Conservation Plan for the region, and
- Promoting smart growth development practices.

5.3 CUMULATIVE EFFECTS ANALYSIS

The cumulative effects analysis was conducted by following the methodological steps outlined above for each resource with the potential to contribute to cumulative effects. The results of this analysis are presented below.

5.3.1 HUMAN ENVIRONMENT

Air Quality and Climate Change

Introduction

In considering cumulative effects on air quality, while one project may not significantly affect air quality, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

As with construction and operations and maintenance impacts, the following six significance criteria were considered in evaluating the potential for cumulative impacts:

1. Air Quality Management Plan Conformance (Criterion AIR-1)
2. Regional Emission Thresholds (Criterion AIR-2)
3. Thresholds for Toxic Air Contaminants (Criterion AIR-3)
4. Federal General Conformity (Criterion AIR-4)
5. Odors (Criterion AIR-5)
6. Global Climate Change (AIR-6)

Criterion AIR-1 provides a framework for evaluating whether an individual project is consistent with the applicable Air Quality Management Plan for the air basin in which the project is proposed. From a cumulative standpoint, the Air Quality Management Plan addresses both individual projects and the total air quality impact from all projects within the scope of the Air Quality Management Plan, and the air basin for which the plan applies.

Criterion AIR-2 is typically applied only to direct impacts, rather than cumulative impacts. The regional emission thresholds provide a means to evaluate whether project-specific emissions would have a direct impact on air quality. If, however, the project's emissions exceed regional emission thresholds, it can be concluded that the project could have a cumulatively considerable impact on air quality as well.

Criterion AIR-3 addresses toxic air contaminants, which are typically addressed on a project-specific basis. The thresholds proposed by the South Coast Air Quality Management District (SCAQMD) for evaluating impacts are based on an individual project's direct incremental contribution to health risks, rather than cumulative impacts. It should be noted that the

SCAQMD's MATES-III study (SCAQMD 2008) predicted background risks within the South Coast Air Basin (SCAB) that are above the incremental significance threshold of 10 in a million for excess cancer risks. The Antelope Valley Air Quality Management District (AVAQMD) and the Kern County Air Pollution Control District (KCAPCD) have not established specific thresholds for evaluation of toxic air contaminant impacts.

Criterion AIR-4 provides a means for evaluating a project's potential for cumulative impacts by identifying both a project-specific emission threshold and a regional threshold. Should a project's emissions exceed 10 percent of the regional emissions budget in the air basin in which it is proposed, the project would exceed the federal conformity threshold and would have a cumulatively considerable impact on air quality in that region.

Criterion AIR-5 indicates that if a project's odors, combined with other odor-generating projects, have the potential to affect a substantial number of people, the project would have a cumulatively considerable impact. The evaluation of odors would depend on a combination of similar odor effects.

Criterion AIR-6 is, by nature, a cumulative impact, as a project's direct impact on the global climate cannot be evaluated.

Impact Area

The BRRTP falls within portions of two different air basins. These are the Mojave Desert Air Basin (MDAB) and the South Coast Air Basin (SCAB). The SCAB is currently classified as a severe nonattainment area for O_3. The SCAB is also classified as a serious nonattainment area for PM_{10}, a nonattainment area for $PM_{2.5}$, and a maintenance area for CO. The MDAB is classified as a nonattainment area for O_3 and PM_{10}. Due to the status of the air basins as nonattainment areas, exceedances of the regional emission thresholds or federal conformity thresholds may indicate that a cumulatively considerable impact would result.

Direct and Indirect Impacts Summary

Direct and indirect impacts were evaluated in the air quality impact analysis for the BRRTP. Based on that analysis, the following impacts were identified as potentially significant:

- Criterion AIR-2: PM_{10} emissions exceed regional thresholds for all Alternatives in the MDAB and SCAB. PM_{10} emissions exceed regional thresholds in the SCAB for construction of the new 230 kV circuit, and exceed regional thresholds in the MDAB and SCAB for reconductoring.
- Criterion AIR-4: While emissions from individual Project components would be less than the federal conformity thresholds, should individual Project components occur within the same year, emissions have the potential to exceed the *de minimis* threshold for NOx within the SCAB.

Cumulative Effects Evaluation

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations, measures the concentrations of pollutants from existing sources. Past and present project impacts are therefore included in the background ambient air quality data.

The projects listed in Section 5.2, Cumulative Projects List, could be under construction, or in operation during the time that the BRRTP is under construction. It would be speculative, however, to determine how many projects, or which projects, could be under construction or in operation during BRRTP construction. It is not possible, therefore, to quantitatively evaluate emissions from each project listed, and to evaluate their cumulative impacts.

As discussed in the construction emissions evaluation for the BRRTP (see Chapter 4 of this Final EIS/EIR), emissions of PM_{10} would exceed the regional significance criteria for all Alternatives routes, as well as for construction of the new 230 kV circuit within the SCAB, and reconductoring of the existing transmission line within the MDAB and SCAB. Given the proposed construction schedule for the BRRTP as well as other cumulative projects, it is likely that other projects would be under construction and/or operation at the same time as the BRRTP within both the MDAB and the SCAB. Because emissions of PM_{10} exceed the regional significance thresholds, and because it is likely that cumulative projects would result in air emissions simultaneously with the BRRTP construction activities, construction of the BRRTP would result in cumulatively considerable, but temporary, impacts to air quality due to emissions of PM_{10}. Cumulatively considerable impacts would be mitigated to the extent feasible with implementation of dust control measures during construction.

As discussed above, should construction activities occur simultaneously for the BRRTP within the SCAB, it is possible that emissions of NOx would exceed the federal conformity *de minimis* threshold of 10 tons per year. Construction emissions would not, however, exceed the regional significance threshold of 10 percent of the regional emissions budget. It is therefore unlikely that construction would result in a cumulatively considerable impact for NOx emissions. It should be noted that emissions budgets for the SCAB and the MDAB do consider construction emissions as part of their overall regional emissions. In addition, these regional emissions are included in the modeling that is conducted to demonstrate that the SCAB and MDAB would meet the ambient air quality standards, following implementation of emission strategies and control measures that are included in the SCAB and MDAB air quality management plans. Because NOx emissions associated with construction of the BRRTP are a small fraction of the total construction emissions budget for both air basins, and because the Project would comply with applicable requirements for construction equipment and vehicle emissions, emissions of NOx would not result in a cumulatively considerable impact.

The SCAQMD has not developed a significance threshold for cumulative health risks, nor has it identified a methodology for analyzing cumulative health risks by combining impacts from a cumulative project list. The significance threshold is based on the incremental contribution of a project rather than cumulative impacts. The main toxic air contaminant associated with construction is diesel particulate matter. Diesel particulate matter has been identified by the State of California as a pollutant that has the potential to result in adverse health effects from chronic (i.e., long-term) exposure. Excess cancer risks are calculated based on a lifetime of exposure (70 years). Chronic exposure is defined by the California Office of Environmental

Health Hazard Assessment as eight years or longer. The BRRTP would be constructed in a shorter time period that would not result in long-term exposure of individuals to diesel particulate matter. Furthermore, construction of the BRRTP would be transient in nature, moving from place to place during construction activities.

Because construction would be temporary, occurring mainly in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals, cumulative construction projects would not contribute to long-term impacts from toxic air contaminants (TACs). The portions of the route that would be within the MDAB and in the northern part of the SCAB have very low residential populations, and there are no schools near any of the construction sites within the MDAB or SCAB. The closest residences to the BRRTP for any Alternative route would be approximately 250 feet from the construction site. It is not anticipated that other temporary construction activities for cumulative projects would contribute to long-term exposure of sensitive populations to TACs, and thus would not contribute to a cumulatively significant impact for TAC emissions due to the temporary nature of construction for the BRRTP.

For this reason, impacts associated with toxic air contaminant emissions would not be cumulatively considerable.

Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. To have the potential to combine with odors from the BRRTP, odor-generating activities from other current and reasonably foreseeable projects would have to occur concurrently and very close to the odor-generating activities of the Project Given the temporary nature of construction, the remote locations of most of the construction sites for the BRRTP, the lack of sensitive receptors in the immediate vicinity of construction activities, and the low likelihood that cumulative projects would contribute substantially to odors in the immediate vicinity of the BRRTP's activities, odor impacts would not be cumulatively significant.

Global climate impacts are by nature cumulative; therefore, the analysis presented to evaluate the BRRTP's direct impacts due to greenhouse gas emissions is applicable to cumulative impacts. Because the BRRTP's emissions would be temporary and below the SCAQMD's draft significance threshold of 10,000 metric tons, minimal cumulative impacts are anticipated due to construction of the BRRTP.

Noise

From a noise perspective, the Proposed Action and Alternatives, when considered together with other reasonably foreseeable projects, have the potential to result in short term cumulative noise effects during the construction phase of the BRRTP in the Project area.

The Proposed Action and Alternative alignments traverse a wide variety of land uses including: BLM public land, forested areas, open areas, residential communities, commercial, and industrial areas. Past development and population growth within the various cities and counties traversed by the BRRTP proposed alignments and in adjacent unincorporated areas have expanded the potential for man-made noise, mainly due to roadway traffic, air traffic, railway transportation and ongoing construction projects. Due to the multiple types of land uses that have developed, a wide range of noise sources occur in the geographic area and would continue to occur in the cumulative baseline.

Future baseline noise levels within the geographic area are expected to be incrementally higher than the levels in the present regional setting where increased residential and commercial development would be expected. This is particularly true for open areas that currently have relatively low ambient noise levels.

With the addition of the BRRTP 230 kV transmission line, cumulative impacts associated with corona generated audible and radio noise would be additive but are expected to be less than the levels of noise caused by the operation of the existing LADWP +/- 500 kV PDCI transmission line. In Alternative 3, the existing SCE transmission lines (including the TRTP 500 kV transmission line) would produce higher foul weather noise levels than the proposed BRRTP 230 kV transmission line.

Operational phase corona discharge noise from the existing LADWP 500 kV and 230 kV transmission lines as well as noise from the Rinaldi Substation transformers are below State, county, and city noise ordinances at the edge of the ROW.

Land Use

Introduction

In considering cumulative effects on land uses, while one project may not significantly affect land use, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

Land uses directly affected by Alternatives 1 through 3 would include those which are located either adjacent to the Alternative study corridors or currently sited in one of the new or expanded switching station sites (Haskell Canyon and Barren Ridge, respectively). Some land uses situated along temporary access roads may experience indirect effects. The cumulative impacts analysis, as it relates to affected land uses by other past or reasonably foreseeable future actions, is located within a geographic area of one-half mile of the Alternative corridors. This is consistent with the spatial parameters set for the land use impact area that was used to inventory the existing and planned land uses (please refer to the Land Use environmental setting described in Chapter 3 of this Final EIS/EIR).

Alternatives 1, 2 and 3 can be characterized by large expanses of undeveloped open space and agriculture with scattered residential development. Numerous land divisions, including subdivisions, are present in the Kern County portion of the impact area. Many of these land divisions were speculative and occurred in the early 1960s. In the Los Angeles County portion of the impact area, several large tracts of undeveloped land have been planned for future development. Specific development sites include the rapidly growing city of Santa Clarita, which has recently experienced residential, commercial, and business development. Alternative 2a is generally characterized by the same land uses as Alternative 2 with the exception of a seven-mile area on USFS lands in the ANF. In this seven-mile area, management focus is on open space protection and boundary management in anticipation of future adjacent development.

Any past project or activity that would preclude the use, or disturb or diminish the function, of a particular land use within one-half mile of the Alternative corridors would contribute to the cumulative condition of the impact area.

Reasonably Foreseeable Future Actions

The land use cumulative effects analysis utilized a list of present and reasonable foreseeable projects within one-half mile radius of each Alternative. The Cumulative Projects Map (Figure 5-1) illustrates the locations of the major cumulative projects in the BRRTP area. The list of projects includes: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects. Any proposed or future project that would potentially preclude the use of, disturb, or diminish the function of a particular land use within this impact area may contribute to a cumulative effect.

Numerous energy infrastructure, wind and solar generation projects are in various stages of planning and development within the vicinity of the Project. The Transmission Project and Generation Project lists under Section 5.2.1 provide brief descriptions, and Table 5-4 (below) summarizes which Alternative(s) the projects may impact.

TABLE 5-4. ENERGY INFRASTRUCTURE PROJECTS WITHIN 0.5 MILE OF ALTERNATIVE(S)

Energy Infrastructure Project	Alternative(s)
Generation	
Absolutely Solar	3
Alta East Wind Project	1, 2, 2a, 3
Alta Wind Infill Project	1, 2, 2a, 3
Antelope Solar 1	2, 2a
Antelope Solar Farm	3
Antelope Valley Solar	1, 2, 2a, 3
Avalon Wind Project	1, 2, 2a, 3
Barren Ridge Type 2	1, 2, 2a, 3
Bent Tree Wind Farm Type II	1
Catalina Renewable Project	1
Lower West Wind	1
Oak Creek - Sun Creek Type II	1, 2, 2a, 3
Pacific Wind Addendum	1
RE Distributed Solar - Barren Ridge 1	1, 2, 2a, 3
Ridge Rider Solar Park	1, 2, 2a, 3
Rising Tree Wind	1, 2, 2a, 3
Rosamond Solar Array	2, 2a, 3
TUUSSO (TA High Desert)	3
Willow Springs Solar Array	2, 2a, 3
Transmission	
Antelope Transmission Project (ATP) Segment 3	1, 2, 2a, 3
Tehachapi Renewable Transmission Project (TRTP) Segment 4	1, 2, 2a, 3
Tehachapi Renewable Transmission Project (TRTP) Segment 5	3
Tehachapi Renewable Transmission Project (TRTP) Segment 10	1

Residential development includes large-scale projects that are existing (Ritter Ranch Specific Plan) or planned (Centennial Specific Plan and North Lake Specific Plan). Planned and reasonably foreseeable projects also occur on USFS lands, which include the Santa Clara/Mojave Rivers District of the ANF. However, no specific projects have been identified that would contribute to a cumulative impact on residential or non-residential land uses. These projects on USFS lands may potentially preclude the use of, disturb, or diminish the function of a particular land use and may contribute to a cumulative effect.

Additionally, relevant planning and environmental documents were considered when identifying activities that could potentially contribute to cumulative land use impacts. These documents guide the location and types of development in the context of long-term physical development.

Cumulative Effects Evaluation

Land use impacts associated with each Alternative would result from: a preclusion, disruption, or division of planned and permitted land uses; short- or long-term conflicts with surrounding land uses; or inconsistencies with federal, State or local land use policies or regulations. Potential land use impacts that would arise from either construction, operational or maintenance activities would be cumulatively considerable if they combined with similar effects of other projects. The cumulative effects evaluation generally follows the format of analyzing the applicable individual land use impacts identified in Chapter 4.

Alternative 1

Impact LU-1 (*Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies*) would not contribute to a cumulatively considerable effect. With the exception of the Project crossing a Back Country Non Motorized (BCNM) land use zone, Alternative 1 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM's granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of Alternative 1. As discussed above, numerous reasonably foreseeable projects are in the area surrounding Alternative 1. Each new development proposed within the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that most potential land use impacts would remain less than significant.

Furthermore, implementation of General Practice (GP)-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Impact LU-2 (*Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses*) and Impact LU-3 (*Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses*) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would be traversed by Alternative 1. As previously discussed in Chapter 4, Section 4.2.3, Land Use, construction activities could cause direct effects on existing residential and non-residential land uses within approximately 1,000 feet of a construction site. Project construction occurring at the same time as Alternative 1 and affecting residential or non-residential land uses within 1,000 feet of Alternative 1 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 1. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously close to Alternative 1.

The proposed Project would be designed and constructed such that transmission structures would be located to maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) that would reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would cause the Alternative 1 contribution to this impact to be less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses*) would create an incremental effect that is cumulatively considerable. Portions of Alternative 1 would be constructed within the development boundaries of the approved Mojave and Willow Springs Specific Plans. Alternative 1 would also abut existing residential properties in Los Angeles County. The proposed PDV Wind Energy Project would occupy land within the Willow Springs Specific Plan area, which may preclude future residential development. Construction of both Segment 3 of the proposed Antelope Transmission Project and Segments 4 and 10 of the TRTP would cross or generally parallel Alternative 1 in Kern County. However, prior to the construction of transmission projects, the applicant must obtain regulatory approvals and the rights to construct and operate the projects that affect private property owners. Since the utilities would secure new ROWs with existing property owners, the Alternative 1 cumulative impact would be less than significant.

Impact LU-5 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses*) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 1 would include utilities, resource management, transportation, and light industrial uses (see Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal land agencies that include the California Department of Water Resources (DWR), California Department of Parks and Recreation, California Department of Transportation, USFS, BLM, and Department of Defense (DoD). Local jurisdictions would also be traversed by Alternative 1. As described above for Impact LU-4, energy projects have been proposed within one-half mile of the proposed Project. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 1 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 1. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 1 may pose to the management and use of non-residential lands. With implementation of GP-50, the Alternative 1 cumulative impact would be less than significant.

Alternative 2

Impact LU-1 (*Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies*) would not contribute to a cumulatively considerable effect. Alternative 2 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM's granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of the Alternative 2 area. As discussed, numerous projects proposed or under development are in the area surrounding Alternative 2. Each new development proposed within the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that potential land use impacts would remain less than significant.

Furthermore, implementation of GP-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Impact LU-2 (*Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses*) and Impact LU-3 (*Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses*) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would be traversed by Alternative 2. Project construction occurring at the same time as Alternative 2 and affecting residential or non-residential land uses within 1,000 feet of Alternative 2 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 2. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously in close proximity to Alternative 2.

The proposed Project would be designed and constructed so that transmission structures would maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) to reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would cause the Alternative 2 contribution to this impact to be less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses*) would create an incremental effect that is cumulatively considerable. Portions of Alternative 2 would be constructed within the development boundaries of the approved Mojave, Soledad Mountain-Elephant Butte, and Willow Springs Specific Plans. Alternative 2 would also abut existing residential properties in Los Angeles County. The proposed Alta-Oak Creek Mojave Wind Energy Project would occupy land within the Soledad Mountain-Elephant Butte Specific Plan area, which may preclude future residential development. Segment 3 of the proposed Antelope Transmission Project would be constructed generally parallel to Alternative 2, southwest of the Willow Springs area. However, prior to the construction of transmission projects, LADWP must obtain regulatory approvals and the rights to construct and operate the projects that affect private property owners. Since the utilities would secure new ROWs with existing property owners, incremental contribution to the cumulative impact associated with Alternative 2 would be less than significant.

Impact LU-5 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses*) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 2 would include utilities, resource management, transportation, and light industrial uses (see Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal and State agencies that include the California DWR, California Department of Parks and Recreation, California Department of Transportation, USFS, BLM, and DoD. Local jurisdictions would also be traversed by Alternative 2. As described above for Impact LU-4, energy projects have been proposed within one-half mile of Alternative 2. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 2 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 2. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 2 may pose to the management and use of non-residential lands. With implementation of GP-50, cumulative impacts associated with Alternative 2 would be less than significant.

Alternative 2a

Impact LU-1 (Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies): Alternative 2a traverses the following land use zones designated in the ANF Land Management Plan (LMP): Back Country Non-Motorized (BCNM) and Back Country (BC). Development of facilities, roads, and major utility corridors in the BCNM land use zone would be inconsistent with the LMP.

Impact LU-3 (*Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses*) would be the same for Alternative 2a as for the Proposed Action, and would not contribute to a cumulatively considerable effect. With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change) and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses would be less than cumulatively considerable for Alternative 2a. With implementation of these measures, cumulative impacts associated with Alternative 2a would be less than significant.

Impact LU-5 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses*) would be the same for Alternative 2a as for the Proposed Action, and would create an incremental effect that is cumulative in nature. With implementation of GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change) and 4.2.8 (Traffic and Transportation), Alternative 2a cumulative impacts would be less than significant.

Alternative 3

Impact LU-1 (*Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies*) would not contribute to a cumulatively considerable effect. Alternative 3 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM's granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of Alternative 3. As discussed, numerous projects proposed or under development are in the area surrounding Alternative 3. Each new development proposed within the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that potential land use impacts would remain less than significant.

Furthermore, implementation of GP-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Impact LU-2 (*Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses*) and Impact LU-3 (*Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses*) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would be traversed by Alternative 3. Project construction occurring at the same time as Alternative 3 and affecting residential or non-residential land uses within 1,000 feet of Alternative 3 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 3. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously close to Alternative 3.

The proposed Project would be designed and constructed such that transmission structures would be located to maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) that would reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would reduce the Alternative 3 contribution to this impact, to less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses*) would create an incremental effect that is cumulatively considerable. Portions of Alternative 3 would be constructed within the planned residential development boundaries of the Mojave, Soledad Mountain-Elephant Butte, Willow

Springs, Ritter Ranch, and City Ranch Specific Plans. Alternative 3 would also abut existing residential properties in Los Angeles County. The proposed Alta-Oak Creek Mojave Wind Energy Project would occupy land within the Soledad Mountain-Elephant Butte Specific Plan area, which may preclude future residential development. Segment 3 of the Antelope Transmission Project would be constructed generally parallel to Alternative 3, southwest of the Willow Springs area. However, prior to the construction of transmission projects, regulatory approvals and the rights to construct and operate the projects with affected private property owners would need to be obtained. Since the utilities would secure new ROWs with existing property owners, the Alternative 3 incremental contribution to the cumulative impact would be less than significant.

Impact LU-5 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses*) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 3 would include mineral extraction, utilities, resource management, transportation, and light industrial uses (please refer to Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal and agencies that include the California DWR, California Department of Parks and Recreation, California Department of Transportation, USFS, BLM, and DoD. A number of county and city jurisdictions would also be traversed by Alternative 3. As described above for Impact LU-4, energy projects have been proposed within one-half mile of Alternative 3. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 3 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 3. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 3 may pose to the management and use of non-residential lands. With implementation of GP-50, the Alternative 3 cumulative impact would be less than significant.

Agricultural Resources

Introduction

In considering cumulative effects on agricultural resources, while one project may not significantly affect agriculture, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

Although the data on Farmland and lands under Williamson Act contract are collected and analyzed by county, because of the large geographic extent of the counties affected by the Proposed Action and Alternatives and limited geographic scope of associated agricultural impacts, analysis of the cumulative effects at a county-wide level would not yield valuable results. Consequently, the geographic scope of this cumulative effects analysis is limited to the area in the vicinity of the Proposed Action and Alternatives, a corridor of 0.5 mile on either side of each Alternative in southern Kern County and northern Los Angeles County.

Present and Reasonably Foreseeable Actions

Existing cumulative conditions for agricultural resources are defined by past and present use and conversion of agricultural lands.

Alternative 1

Alternative 1 would traverse 2.8 linear miles of agricultural land (cropland). Of the 2.8 linear miles of agricultural land, 1.6 miles are Williamson Act lands. No lands were identified as Department of Conservation (DOC) Farmlands.

The trend in residential development is representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 1 area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 1, a list approach is used to identify foreseeable projects in the vicinity of agricultural resources affected by Alternative 1. Reasonably foreseeable future actions within the Alternative 1 area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 1 is largely characterized by open space, active or fallow agricultural land, and rural residences. Agricultural lands in the more urban parts of Kern County are being converted for residential development.

Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007), the County's population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the county's agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 1 in Los Angeles County from Kern County to the ANF is characterized by open space and agricultural areas (e.g., unincorporated community of Neenach); however, areas near the city of Santa Clarita are experiencing growth, which in turn is driving the expansion of residential development into open spaces.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of Alternative 1. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the city of Santa Clarita experiencing a high growth rate. Development and urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

Alternative 2 and Alternative 2a

Alternative 2 and Alternative 2a would both traverse 4.5 linear miles of agricultural land (cropland). Of the 4.5 linear miles of agricultural land, 3.7 miles are DOC Farmlands. No lands were identified as Williamson Act lands.

As discussed above, ongoing development throughout the cumulative effects area for agricultural resources is typically characterized by the conversion of Farmland to grazing land, and grazing land to residential developments, clustered in and around community developments on non-USFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 2 and Alternative 2a area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 2 or Alternative 2a, a list approach is used to identify foreseeable projects in the vicinity. Reasonably foreseeable future actions within the area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 2 and Alternative 2a is largely characterized by open space, active or fallow agricultural land, and rural residences. While in more urban parts of Kern County agricultural lands are being converted for residential development, in the rural area around Alternative 2 and Alternative 2a, conversion of irrigated Farmland is usually a result of taking it out of production to allow for grazing.

Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007), the county's population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the County's agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 2 and Alternative 2a from Kern County to the ANF is characterized by open space and agricultural areas, although the cities of Lancaster and Palmdale are experiencing growth that is driving the expansion of residential development into open spaces, such as with Ritter Ranch, City Ranch, Joshua Ranch, and other developments. While little irrigated Farmland has been converted for residential development, as in Kern County, this land is being taken out of production for use as grazing land.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of the Proposed Action. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the cities of Lancaster and Palmdale both experiencing high growth rates. As such, development and urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population. Accommodation of this population growth requires infrastructure projects, such as the Antelope Transmission Project Segment 3, TRTP Segment 4, the Antelope Valley Water Bank Project, the California High Speed Rail, and the Orangeline High Speed Maglev Project, all of which are in the vicinity of agricultural lands. As with Kern County, Farmland is typically taken out of production and converted to grazing land, which is then later converted for residential development.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

Alternative 3

Alternative 3 would traverse 4.5 linear miles of agricultural land (cropland). Of the 4.5 linear miles of agricultural land, 4.7 miles are DOC Farmlands. No lands were identified as Williamson Act lands.

As discussed above, ongoing development throughout the cumulative effects area for agricultural resources is typically characterized by the conversion of Farmland to grazing land, and grazing land to residential developments, clustered in and around community developments on non-USFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 3 area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 3, a list approach is used to identify foreseeable projects in the vicinity of agricultural resources affected by Alternative 3. Reasonably foreseeable future actions within the Alternative 3 area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 3 is largely characterized by open space, active or fallow agricultural land, and rural residences. While in more urban parts of Kern County agricultural lands are being converted for residential development, in the rural area around Alternative 3, conversion of irrigated Farmland is usually a result of taking it out of production to allow for grazing.

Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007) the County's population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the County's agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 3 in Los Angeles County from Kern County to the ANF is characterized by open space and agricultural areas, although the cities of Lancaster and Palmdale are experiencing growth that is driving the expansion of residential development into open spaces, such as with Ritter Ranch, City Ranch, Joshua Ranch, and other developments. While little irrigated Farmland has been converted for residential development, as in Kern County, this land is being taken out of production for use as grazing land.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of Alternative 3. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the cities of Lancaster and Palmdale both experiencing high growth rates. As such, development and urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population. Accommodation of this population growth requires infrastructure projects, such as the Antelope Transmission Project Segments 1-3, TRTP Segments 4-11, the Antelope Valley Water Bank Project, the California High Speed Rail, and the Orangeline High Speed Maglev Project, all of which are in the vicinity of agricultural lands. As with Kern County, Important Farmland is typically taken out of production and converted to grazing land, which is then later converted for residential development.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

Cumulative Effects Evaluation

Alternative 1

Impacts AG-3 and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 1 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 1 would temporarily interfere with active agricultural operations by impeding access to certain fields or plots of land, obstructing farm vehicles and equipment, and disrupting grazing activities, all of which could result in the temporary reduction of agricultural productivity. Alternative 1 impacts would be significant when combined with impacts of current and future projects if those projects would interfere with operations to the same agricultural lands at the same time as Alternative 1. However, based on the locations of the current and reasonably foreseeable projects listed in Chapter 3 (see Section 3.2.3, Land Use) and the relatively small number of agricultural lands that would be affected by them or Alternative 1, it is unlikely any of those projects would impact the same agricultural land at the same time as Alternative 1. Therefore, Alternative 1 impacts would not combine with impacts from other current and reasonably foreseeable projects to result in a cumulative impact (No Impact).

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 1 across 2.8 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. Although it is currently unknown whether any of the reasonably foreseeable projects would convert agricultural land to non-agricultural uses, given the large number of energy infrastructure projects, it is reasonable to assume that some agricultural land would be permanently converted. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would help to reduce the Alternative 1 incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for Alternative 1, Impact AG-4 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Alternative 2 and Alternative 2a

Impacts AG-1, AG-3, and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 2 or Alternative 2a to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would temporarily preclude the agricultural use of Farmland (Impact AG-1). Alternative 2 or Alternative 2a would result in the temporary conversion of 224 acres of Farmland due to construction activities. In these areas, construction of solar generation projects in Kern County would result in areas of Farmland being converted to non-agricultural uses. The effects of the construction of these planned projects would be cumulatively significant. The following would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-1: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 2 or Alternative 2a, Impact

AG-1 would have the potential to combine with other, similar impacts of other projects; as such, Impact AG-1 would be cumulatively significant and unavoidable under CEQA.

Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 2 and Alternative 2a would both traverse 4.5 miles of agricultural land, and construction activities across these lands would interfere with agricultural operations in these areas. Construction of solar generation projects, Antelope Transmission Project Segment 3, and the Antelope Valley Water Bank Project would disrupt agricultural operations both through the disruption of agricultural land and through construction activities on and adjacent to agricultural lands. The effects of the construction of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 and GP-37 would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-3. However, despite implementation of these practices, Impact AG-3 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-3 would be cumulatively significant and unavoidable under CEQA.

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 2 or Alternative 2a across 4.5 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. The projects listed above for Impact AG-3 would also result in these similar impacts, although on a larger scale, and cumulatively interfere with a substantial number of agricultural operations. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for the Proposed Action, Impact AG-4 would have the potential to combine with other, similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Alternative 3

Impacts AG-1, AG-3, and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 3 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would temporarily preclude the agricultural use of Farmland (Impact AG-1). Alternative 3 would result in the temporary conversion of 224 acres of Farmland due to construction activities. In these areas, construction of solar generation projects in Kern County would result in areas of Farmland being converted to non-agricultural uses. The effects of the construction of these planned projects would be cumulatively significant. The following would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-1: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 3, Impact AG-1 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-1 would be cumulatively significant and unavoidable under CEQA.

Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 3 would traverse 4.5 miles of agricultural land, and construction activities across these lands would interfere with agricultural operations in these areas. Construction of solar generation projects, Antelope Transmission Project Segment 3, and the Antelope Valley Water Bank Project would disrupt agricultural operations both through the disruption of agricultural land as well as through construction activities on and adjacent to agricultural lands. The effects of the construction of these other planned projects on agricultural operations would be cumulatively significant. The following would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-3: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 3, Impact AG-3 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-3 would be cumulatively significant and unavoidable under CEQA.

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 3 across 4.5 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. The projects listed above for Impact AG-3 would also result in these similar impacts, although on a larger scale, and cumulatively interfere with a substantial number of agricultural operations. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for Alternative 3, Impact AG-4 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Recreation

Introduction

In considering cumulative effects on recreation, while one project may not significantly affect recreation, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

The geographic extent of the cumulative effects analysis is the same as the extent of the Project area setting described in Chapter 3, Section 3.2.5 (Recreation). As such, the cumulative effects analysis is presented in two separate geographic regions: Kern County, which includes parts of southern Kern County, and Los Angeles County, which encompasses the ANF and portions of northern Los Angeles County. This geographic scope is appropriate for the issue area of recreation because impacts of the proposed Project would not be expected to combine with similar impacts of other projects beyond this area.

Present and Reasonably Foreseeable Actions

Existing cumulative conditions for recreation are defined by past and present designation and development of recreational resources. Ongoing development throughout the cumulative effects area for recreation is dominated by residential developments, clustered in and around communities located on non-NFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by population growth forecasted throughout the area. Reasonably foreseeable future actions within the area are expected to be characteristic of past and ongoing projects.

The impact area within in Kern County is largely characterized by open space and agricultural areas, with small concentrations of residential development. Recreational resources are primarily in the form of open space, OHV (off-highway vehicle) roads, and walking trails. Developed recreation facilities can be found in or near the unincorporated communities of Mojave and Rosamond. BLM public lands, located north of the unincorporated community of Mojave, offer dispersed recreational opportunities.

It is expected that open space areas which are currently used by recreationists for OHV use, hiking, and general outdoor enjoyment, would be utilized for the construction of residential developments and energy infrastructure. With regard to recreation, it is also reasonably foreseeable that additional facilities and resources such as sporting fields and park areas would be established to meet the needs of an increasing population (especially in or near communities). However, this type of development is commonly located on former open space or agricultural areas and therefore, as such development continues, less open space would be available for recreational purposes such as hiking and OHV use.

Within Los Angeles County, existing cumulative conditions include efforts by the USFS to manage the ANF. From a recreation perspective, past and present projects within the ANF are characterized by USFS activities to improve and maintain developed recreation resources such as campgrounds and picnic areas, manage trails and OHV networks, and prevent construction within or degradation of designated wilderness areas. Chapter 3, Section 3.2.5 (Recreation) provides a detailed description of recreational resources in the ANF which have resulted from past and present projects and make up the existing cumulative conditions. In addition to projects across the ANF, an increase in the developmental density surrounding the ANF has strained the capacity of the recreational resources on National Forest System (NFS) lands. Recreational facilities such as roads, trails, campgrounds, and day use areas have been constructed to meet the demands of increased visitation to the ANF.

Outside the ANF within Los Angeles County, rapid development and population growth has occurred within and surrounding the incorporated cities of Santa Clarita, Lancaster and Palmdale. Some of this population growth has been situated in open space areas in northern Los Angeles County. For example, the Ritter Ranch and City Ranch developments that are currently under construction, in addition to the approved Agua Dulce Residential Project (TR 50385), are located in former open space areas.

As with the future non-NFS projects, the past and ongoing NFS projects are representative of future NFS projects. It is expected that most of these projects are focused on repairs, re-establishment, or rehabilitation of existing facilities. As presented in Section 5.2.2 above, some of the USFS projects which are planned or underway in the ANF include plantation maintenance, restoration, and habitat improvement projects as well as a variety of “fuels reduction” activities, which include fire prevention measures throughout the Forest. These projects indicate a persistence of past and present USFS activities to preserve natural resources within the Forest while providing recreational opportunities for the public. Reasonably foreseeable changes to recreational resources in the Forest may include improvements to and expansion of existing resources, as well as establishment of additional resources or facilities. It is expected that existing wilderness areas in the Forest would continue to be protected from development and expanded if possible (for instance, through the conversion of an Inventoried Roadless Area under consideration for wilderness designation to a designated Wilderness Area).

As previously discussed, northern Los Angeles County is currently undergoing rapid population growth and development, particularly in and surrounding the cities of Santa Clarita, Lancaster and Palmdale. This trend is expected to continue and increase substantially to accommodate the growing population. With regards to recreation, it is also reasonably foreseeable that additional facilities and resources such as sporting fields and park areas would be established to meet the needs of the growing population. However, development in this region is commonly located on former open space areas; therefore, as such development continues, less open space would be available for recreational purposes. It is assumed that the Los Angeles County Riding and Hiking Trails network, which is described in Chapter 3, Section 3.2.5 (Recreation), would continue to be managed and protected by the LA County Department of Parks and Recreation.

Cumulative Effects Evaluation

Alternative 1

Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 1 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1). Construction activities associated with Alternative 1 would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 1 impact area result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with Alternative 1 construction activities, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable.

Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 1 would have the potential to temporarily restrict access to or disrupt activities within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 1 ROW would be particularly susceptible to Impact R-2. Alternative 1 would not result in permanent loss or degradation of recreational resources in the Alternative 1 impact area. If operation and maintenance activities associated with other projects in the geographic scope of this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 1, the resulting impacts would be cumulatively considerable to recreational resources in the Alternative 1 area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 1 would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 1 and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Proposed Action would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 1 route would cross over the PCT in two locations. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 1 along the PCT and at the same time as those of Alternative 1, it would be possible for such impacts to combine with impacts of Alternative 1 and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 1 and near the same locations where Alternative 1 would cross the PCT. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 1 would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 1 would help to reduce the Alternative 1 incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique recreational resource, any combination of similar impacts that would affect the PCT in the Alternative 1 impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not expected to occur outside of the ANF. Alternative 1 would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.

The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 1 construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the Alternative 1 area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Alternative 2 and Alternative 2a

Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 2 or Alternative 2a to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1). Construction activities associated with Alternative 2 and Alternative 2a would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 2 or Alternative 2a impact areas result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with construction activities associated with Alternative 2 or Alternative 2a, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable. Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 2 or Alternative 2a would have the potential to temporarily restrict access to or disrupt activities within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 2 ROW would be particularly susceptible to Impact R-2. Both Alternative 2 and Alternative 2a would not result in permanent loss or degradation of recreational resources in the impact area. If operation and maintenance activities associated with other projects in the geographic scope of this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 2 or Alternative 2a, the resulting impacts would be cumulatively considerable to recreational resources in the area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 2 and Alternative 2a would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 2 or Alternative 2a and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 2 and Alternative 2a routes would each cross over the PCT in one location. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 2 or Alternative 2a along the PCT and at the same time as those of Alternative 2 or Alternative 2a, it would be possible for such impacts to combine with impacts of Alternative 2 or Alternative 2a and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 2 or Alternative 2a and near the same PCT crossing. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 2 or Alternative 2a would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 2 or Alternative 2a would help to reduce the incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique recreational resource, any combination of similar impacts that would affect the PCT in the impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not expected to occur outside of the ANF. Alternative 2 or Alternative 2a would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.

The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 2 or Alternative 2a construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Alternative 3

Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 3 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1). Construction activities associated with Alternative 3 would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 3 impact area result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with Alternative 3 construction activities, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable. Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 3 would have the potential to temporarily restrict access to or disrupt activities within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 3 ROW would be particularly susceptible to Impact R-2. Alternative 3 would not result in permanent loss or degradation of recreational resources in the Alternative 3 impact area. If operation and maintenance activities associated with other projects in the geographic scope of this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 3, the resulting impacts would be cumulatively considerable to recreational resources in the Alternative 3 area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 3 would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 3 and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 3 route would cross over the PCT in two locations. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 3 along the PCT and at the same time as those of Alternative 3, it would be possible for such impacts to combine with impacts of Alternative 3 and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 3 and near the same locations where Alternative 3 would cross the PCT. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 3 would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 3 would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique recreational resource, any combination of similar impacts that would affect the PCT in the Alternative 3 impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not expected to occur outside of the ANF. Alternative 3 would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.

The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 3 construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the Alternative 3 area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Public Services and Utilities

Introduction

In considering cumulative effects to public services and utilities, while one project may not significantly affect public services and utilities, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

The geographic extent for the analysis of cumulative impacts on public services and utilities would be both Kern and Los Angeles Counties as a whole. This is defined as the geographic extent of the cumulative impact area because public services are provided by county fire and police services to both incorporated and unincorporated areas of the Counties, and because utilities and service systems are provided predominantly by service providers to both incorporated and unincorporated areas of the Counties.

The Project area includes portions of southern Kern County and northern Los Angeles County. The southern portion of Kern County is primarily characterized by open space, agricultural land, and rural residences. The area has changed in recent years due to the development of a number of wind energy projects. A number of additional projects have been approved and/or are under review. Because of the low population of the Project area in this location, the demand for public service and utility systems has not been significantly affected. Public services and utility systems in the Project area are provided by county services that are established in neighboring communities.

The Project area in northern Los Angeles County includes the cities of Lancaster and Palmdale, as well as unincorporated communities. The area has also experienced intense population growth and development within the last two decades. This trend is expected to continue and would impact the capacities of public service and utility providers, through indirect and direct influences of development. As a result, public services and utilities would need to expand to serve the growing population.

The Project area also encompasses the ANF. Development within the ANF is generally limited to recreational facilities and a few private inholdings. There are existing public service and utility systems on NFS lands, including LADWP and SCE transmission lines and water pipelines.

Communities south of the ANF are generally characterized by urban development, and increased population growth is anticipated throughout the region. Available utility resources serving this region include local and county service providers. It is expected that other public service and utility systems would need to expand as development continues to expand in the region.

Present and Reasonably Foreseeable Actions

Southern Kern County is likely to experience considerable changes in the reasonably foreseeable future. Numerous solar and wind projects are proposed for development and/or are currently under review. Within northern Los Angeles County, population growth in the cities of Lancaster and Palmdale and the surrounding unincorporated communities has led to numerous housing developments. Public services and utility providers and facilities are expected to expand substantially in order to continue the provision of services to the existing population while also accommodating the future population growth indicated by the expansion of the residential developments described above.

Existing cumulative conditions in the ANF are defined by management efforts of the USFS, which includes maintenance plans such as hazardous fuels reduction, watershed management, recreation management and road management. From a public services and utilities perspective, past and present projects within the ANF are characterized by USFS efforts to protect ANF resources while providing for utility development in established areas. As described above, some existing utilities and service systems are on NFS lands, such as LADWP and SCE transmission lines, water pipelines, and other utility infrastructure built to accommodate new recreation facilities. It is reasonably foreseeable that similar projects and changes would continue into the future.

The area south of the ANF is generally characterized as urban. Commercial and industrial development is also prevalent. Public services and utility providers and facilities are expected to expand in order to continue the provision of services to the existing population while also accommodating the future population growth.

As the projects listed in Section 5.2 would likely share the same public services and utility providers, all of those identified cumulative projects could impact the same public services and utility providers as the Proposed Action and Alternatives, and are included cumulatively in this analysis.

Cumulative Effects Evaluation

Impacts of the Proposed Action or Alternatives would contribute to cumulative impacts if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The potential for public services and utility system impacts of the Proposed Action or Alternatives to combine with similar effects of other projects within the geographic scope of the cumulative analysis is described below. Impacts that are not found to be cumulative in nature would not have an incremental effect on the cumulative scenario.

Project construction could temporarily increase the demand of fire protection and emergency medical services (Impact PSU-1): Construction of the Proposed Action or Alternatives could result in potentially hazardous conditions that would require emergency services. If construction activities for other projects in the area also result in potentially hazardous conditions that require emergency services, and such potentially hazardous conditions are introduced in the same general area and timeframe as such conditions under the Proposed Action or Alternatives, the resulting impacts could be cumulatively considerable relative to emergency service providers. However, due to the implementation of GPs for the Proposed Action or Alternatives, the likelihood of the need for emergency response teams as a result of construction accidents would be low. To minimize fire potential and unnecessary burden on firefighters, GPs would limit the idling of construction vehicles to 10 minutes or less, and small gas-operated machinery would be turned off when not in use. Implementation of GPs and mitigation measures identified for Wildfire and Fuels would be implemented to reduce the potential for accidental ignition in hazardous areas and to ensure that additional firefighting provisions would not need to be drawn from other critical firefighting areas. In addition, to minimize the potential for construction-related injuries and the need for emergency medical services, LADWP would implement GPs as part of the Proposed Action or Alternatives. Impact PSU-1 would be cumulatively less than significant.

Project operation could increase the demand for fire protection and emergency medical services (Impact PSU-2): Implementation of GPs and mitigation measures identified for Wildfire and Fuels would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Proposed Action or Alternatives. Impact PSU-2 would be cumulatively less than significant.

Project construction activities could temporarily increase the demand for police protection services (Impact PSU-3): Construction of the Proposed Action may require minimal use of local law enforcement agencies in Kern and Los Angeles Counties and in the ANF. In some areas, the Proposed Action or Alternatives would require the installation of transmission towers adjacent to existing road ROWs. During this time, the placement of safety barriers and the temporary or single-lane closure of roadways may be required during the transport of oversized equipment and stringing of the conducting wires. The aid of local policing units is typically solicited for coordination of these activities. PSU-3 would be cumulatively less than significant.

Project construction activities could temporarily increase the demand for schools, parks, or other public facilities (Impact PSU-4): The construction of new or augmentation of existing schools, parks, or other public facilities would not be required to serve the Proposed Action or Alternatives. Impact PSU-4 would not be cumulatively considerable.

Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times (Impact PSU-5): Construction of the Proposed Action or Alternatives would interfere with the regular flow of traffic due to temporary lane closures. From a cumulative impacts perspective, emergency vehicles would be adversely affected if construction of other projects listed in Section 5.2 were to occur proximate to the Proposed Action or Alternatives. To avoid interference with emergency response and evacuation pathways, LADWP would implement GPs. The Traffic Control Plan would identify the locations of all roads scheduled for temporary closure as well as feasible diversion routes. Closure activities would be coordinated with relevant agencies (i.e., police, fire, ambulance, and paramedic services) at least one month prior to each closure event, and would be scheduled to take place during off-peak commute hours. In an emergency situation, construction crews would immediately cease work in order to accommodate emergency vehicles passing through the area. Impact PSU-5 would be cumulatively considerable but less than significant.

Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services (Impact PSU-6): Construction and operation of the Proposed Action or Alternatives could interfere with emergency aircraft services. Construction of other projects in the vicinity of the Proposed Action or Alternatives could also cause interruptions for emergency response operations. Although it is unlikely that interferences would occur at the same time, all flight operations would be restricted by FAA rules on temporary flight restrictions from flying in designated areas. Impact PSU-6 would be cumulatively considerable but less than significant.

Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption (Impact PSU-7): Water would be required for dust suppression during the entire construction period. Each jurisdiction along the proposed route would contribute to the water required by Project construction, which is reasonably expected to be a small fraction of the available water supply. From a cumulative perspective, the majority of planned and reasonably foreseeable projects included in Section 5.2 are residential developments, which require substantially more water and water infrastructure during construction than the Proposed Action or Alternatives. In particular, the cities of Lancaster and Palmdale are characterized by a desert environment and have been experiencing a surge of housing development in previously undeveloped land. However, the existing water supply, which is listed in Chapter 3, Section 3.3.3 (Water Resources), shows that multiple water allocations are available along the entire length of the Proposed Action or Alternatives.

While the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would require a portion of the available water supply for construction activities, the potential impact would be cumulatively considerable but less than significant.

Additional wastewater would be generated during Project construction and operation (Impact PSU-8): The generation of wastewater from the construction and operation of the Proposed Action or Alternatives would not exceed the capabilities of wastewater facilities. Construction of present and reasonably foreseeable future projects in the vicinity of the proposed route would contribute to wastewater generation. However, wastewater from construction personnel and that of construction from surrounding developments is not expected to generate an amount of wastewater that would exceed the capabilities of wastewater facilities. Therefore, while the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would incrementally increase cumulative impacts, this would not significantly impact the capabilities of waste management.

Additional solid waste would be generated during Project construction and operation (Impact PSU-9): Waste generated by the Proposed Action or Alternatives would be disposed of (including through recycling) over the construction period and is not expected to exceed the available capacity of the local landfills. In the cities of Lancaster and Palmdale, the Proposed Action or Alternatives and other present and reasonably foreseeable future projects are generally located west of the established development, in previously undeveloped land. However, waste management services are abundant and there are numerous disposal facilities with available space. Therefore, while the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would require waste capabilities during construction, such waste is not expected to exceed the capabilities of existing waste disposal facilities and recycling facilities. Although impacts on waste management facilities would not be significant and mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from landfill disposal.

Project would conflict with applicable statutes and standards related to solid waste (Impact PSU-10): The Proposed Action or Alternatives would be in full compliance with the Integrated Waste Management Act of 1989, which requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. PSU-9 would ensure such compliance. In addition, projects included in Section 5.2 are also subject to the Integrated Waste Management Act of 1989 and must therefore incorporate maximum recycling efforts during construction activities. Impact PSU-9 would not be cumulatively considerable.

Project construction would temporarily disrupt the flow of services provided by underground or overhead utilities (Impact PSU-11): Disruptions in the flow of utility services for co-located utilities are likely to occur during the construction period, and would require the implementation of PSU-4 in order to reduce the impacts of the Proposed Action or Alternatives to a less than significant level. LADWP would notify the Underground Service Alert at least two working days prior to any Project excavation activities, in accordance with the requirements of California Government Code Section 4216-4216.9, "Protection of Underground Infrastructure."

Construction of other projects in the vicinity of the Proposed Action or Alternatives may also cause temporary utility disruptions. It is unlikely that utility disruptions would occur at the same time; however, if a disruption is known to be unavoidable, LADWP would coordinate with the affected jurisdiction(s) and service provider(s) in order to avoid multiple or extended disruptions, in accordance with PSU-4. Impact PSU-4 would be cumulatively considerable but less than significant.

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures introduced for the Proposed Action or Alternatives would help to reduce the Proposed Action's incremental contribution to cumulative impacts. All potential cumulative impacts that could occur as a result of the Proposed Action or Alternatives would be expected to be less than significant without additional mitigation. No further mitigation is necessary.

Hazardous Waste/Materials

Introduction

In considering cumulative effects to hazardous waste/materials, while one project may not significantly affect hazardous waste/materials, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

The geographic extent for the analysis of cumulative impacts related to environmental contamination is limited to the immediate vicinity surrounding the Project components. Impacts would have the potential to occur during construction and operation and would be limited to the areas where concurrent construction or maintenance would occur.

The area along the route of the Proposed Action or Alternatives alignment consists primarily of open space land, scattered rural residences, residential developments, and agricultural and commercial properties. Within the open space land and residential areas there is little likelihood of significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials. Sites with known environmental contamination would be required by law to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. In addition, areas with previously unknown contamination would likely be discovered during planning, followed by the required reporting and cleanup.

Present and Reasonably Foreseeable Actions

Foreseeable future actions identified for this analysis include major energy and transmission projects, as well as residential development projects located in the jurisdictions that would be traversed by the Proposed Action. The list was reviewed to identify cumulative projects that are planned in areas with known significant soil or groundwater contamination based on prior land use. Although localized areas of soil contamination could be encountered by some of these projects, most are new developments in open areas or expansions of existing residential areas.

Cumulative Effects Evaluation

With regard to cumulative environmental contamination impacts, the contribution of the Proposed Action or Alternatives to a cumulative impact would only be considered significant if it combined with other projects to result in substantial volumes of contaminated soil that require off-site treatment and that, as a combined volume, exceeded the capacity of available treatment facilities or resulted in substantial exposure of hazardous materials to the public. For the reasons discussed below, the contribution to cumulative impacts would not be cumulatively considerable.

Impact HAZ-1 (Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction). As part of the design of the Proposed Action or Alternatives, LADWP would implement several environmental-related project plans to minimize the likelihood of Project-related spills, and would ensure proper waste handling procedures, spill contingencies, and Treatment, Storage and Disposal Facility training in accordance with the OSHA Hazard Communication Standard and 22 CCR.

During the construction period, the storage and use (i.e., refueling or changing) of vehicle/equipment fluids and oils would be confined to approved staging and construction yards, and all construction vehicles would be equipped with a hazardous materials spill kit.

HAZ-1 would be implemented as part of the Proposed Action or Alternatives to decrease the potential for accidental releases to occur and to clean up potentially harmful materials in the unlikely event of a release. Therefore, since any spills of contaminated material would be cleaned, soil or groundwater contamination would not occur and Impact HAZ-1 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-2 (The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors): No existing or planned schools were identified within one quarter-mile of the Proposed Action or Alternatives. Therefore, the Proposed Action would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-3 (*Project construction activities [i.e., site excavation or grading] could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code 65962.5 or other known sites*) could occur if preexisting soil and groundwater contamination is encountered during Project construction, which would result in exposure of construction workers to potential health hazards. Based on a review of the Department of Toxic Substance Control Envirostar database, the impact corridors of Alternative 1, Alternative 2, Alternative 2a, and Alternative 3 would not be located on any known contamination sites listed pursuant to Government Code Section 65962.5. In addition, the Proposed Action or Alternatives include HAZ-2, which would require investigation of potentially contaminated sites along the proposed transmission line route as well as clean up of any contamination identified. Therefore, because any contamination encountered would be removed and/or remediated prior to construction, Impact HAZ-3 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-4 (*Project construction activities [i.e., site excavation or grading] could inadvertently release unknown preexisting soil and/or groundwater contaminants*) could occur if preexisting soil and groundwater contamination is encountered during Project construction, which would result in exposure of construction workers to potential health hazards. Such exposure would be hazardous to people in the immediate vicinity of the contamination since the contaminant would either be limited to the medium in which it is discovered or would volatilize and become airborne. If vapors from potential contamination volatilized, risk of exposure would decrease as distance from the source of contamination increased due to dispersal of the vapors.

Since some types of contamination are detectable by visual and olfactory observation, GPs would be implemented to address common contamination indicators (e.g., an obvious sheen, strong odor, or abnormal stains to soil or groundwater) observed during Project construction activities. Further, the Project construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed.

However, the GPs do not specify methods used to determine if regulatory limits are exceeded and who would be qualified to make such a determination. In addition, these practices do not specify the reporting requirements for these incidents, including documentation of verification sampling results, and measures taken for potentially contaminated sites to the USFS (if on USFS lands) or BLM (if on BLM public lands). Misinterpretation of laboratory data could result in the improper handling or disposal of contaminated materials, resulting in further environmental contamination and/or human exposure to hazardous substances. The Proposed Action or Alternatives include HAZ-2, which would require investigation of potentially contaminated sites along the proposed transmission line route as well as clean up of any contamination identified. Therefore, because any contamination encountered would be removed and/or remediated prior to construction, Impact HAZ-4 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-5 (*Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater*) could result at the substations during facility operation or along the transmission line during maintenance operations. Implementation of GPs would minimize potential contamination impacts related to the improper storage, use, handling, or accidental spillage of such material by requiring enforcement of a Project Emergency Response Plan, and a Hazardous Materials and Hazardous Waste Management Plan.

Mitigation measure HAZ-1 would also be implemented as part of the Proposed Action or Alternatives to decrease the potential for accidental releases to occur and to clean up potentially harmful materials in the unlikely event of a release. Therefore, since any spills of contaminated material would be cleaned, soil or groundwater contamination would not occur and Impact HAZ-5 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-6 (*Herbicides used for vegetation control around towers and other project facilities could adversely affect the health of maintenance workers or the public*) could potentially impact workers or members of the public that enter affected portions of the ROW. BIO-2 would require LADWP contractors to follow herbicide application protocols as recommended by the manufacturer. Therefore, as herbicide application protocols would be in place to prevent environmental contamination and protect worker health and safety, Impact HAZ-1 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Implementation of the above selected GPs in conjunction with mitigation measures was utilized to reduce the contribution of the Proposed Action or Alternatives to significant cumulative effects.

Traffic and Transportation

Introduction

This section details cumulative area projects, which include roadway and area development projects within the impact area as described in the Traffic Technical Study that was prepared for the Draft EIS/EIR and located in Volume III of this Final EIS/EIR. Subsequently, this section was updated to reflect current cumulative projects for this Final EIS/EIR. The summary of the project, location, potential overlap, and impacts with relation to the Proposed Action and Alternatives are described in the following sections.

Present and Reasonably Foreseeable Actions

Roadway Projects

Table 5-5 provides a summary of planned roadway projects that would overlap with the Project Alternatives. The location of these projects is shown on Figure 4 of the Traffic Technical Study in Volume III.

TABLE 5-5. SUMMARY OF MAJOR PLANNED ROADWAY PROJECTS WITHIN IMPACT AREA

Project Location (Jurisdiction)	Project Description	Alternative(s) Impacted
Castaic Cutoff from Lake Hughes Road to San Francisquito Canyon Road (Los Angeles Co.)	Construct a new road – four 12-foot lanes and 10-foot shoulders	1, 2, 2a, 3
Pear Blossom Highway Widening Project: Avenue T to Route 18 (City of Palmdale, City of Llano)	Lane widening to four lanes and drainage improvements	3
SR-14 on the south to Parker Road on the north (City of Santa Clarita, Los Angeles Co.)	Elevated two-lane high occupancy vehicle (HOV) lane connector would be constructed to connected the HOV lanes of I-5 and SR-14	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi) for Alternatives 1, 2, 2a, and 3
Golden Valley Road from Soledad Canyon to Newhall Ranch Road (City of Santa Clarita)	Construct Golden Valley Road to six lanes for less than 0.5 mile, including a bridge over the Santa Clara River	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Golden Valley Road from Newhall Ranch Road to Rum Canyon Road (City of Santa Clarita)	Construct Golden Valley Road to four lanes for approximately 1.5 miles	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Newhall Ranch Road from Golden Valley Road to Bouquet Canyon Road (City of Santa Clarita)	Construct Newhall Ranch Road to six lanes for approximately 1.5 miles	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
North side of the Santa Clara River from I-5 to discover Park (City of Santa Clarita)	Designing seven miles of Class I bicycle/pedestrian pathway	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Via Princessa from Magic Mountain Parkway to Golden Valley Road (City of Santa Clarita)	Construct approximately one mile of new road (three lanes in each direction), including curb/gutter and drainage improvements	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Santa Clarita Parkway from Bouquet Canyon Road to Soledad Canyon (City of Santa Clarita)	Construct a new 2.5 mile road to four lanes	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Via Princessa from Golden Valley Road to Rainbow Glen (City of Santa Clarita)	Construct Via Princessa to six lanes for less than one mile	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Santa Clarita Parkway from Soledad Canyon to Via Princessa (City of Santa Clarita)	Construct Santa Clarita Parkway to six lanes for approximately 1.6 miles	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)
Santa Clarita Parkway from Via Princessa to Route 14	Construct Santa Clarita parkway to six lanes for approximately one mile	Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)

Sources:
Caltrans District 7 Current Projects I-5/SR-14 Direct HOV Connector, September 28, 2008
Caltrans District 7 Future Projects: State Route 138 Corridor Improvement Projects, October 14, 2008
Southern California Association of Governments, 2008 Regional Transportation Plan Project List

Other Area Projects

Several area projects comprise energy infrastructure projects, major projects, maintenance projects, landscape management projects, and local projects as described in Section 5.2. The consideration of potential impacts adjacent to or along the Proposed Action and Alternatives are analyzed within this section.

Cumulative Effects Evaluation

As Project design and construction plans move forward, coordination would be necessary with the lead agencies on these roadway projects, in order to determine if special considerations would need to be made for wider roadway crossings and project timing.

In addition to the identified planned area roadway projects, construction activities for other utility projects that would cross or run parallel to the Proposed Action or Alternatives and would occur within overlapping timeframes could cause cumulative impacts without the proper implementation of mitigation measures.

The Centennial project, once operational and occupied, would generate new daily vehicle trips. The opening of this project is not anticipated to overlap the construction period of the BRRTP, but cumulative impact determinations for this report are conservative. If built, this large development may create potential impacts as part of the site intersects a portion of a Project Alternative. The impacts may occur during both the construction and maintenance phases of the BRRTP, as new trips would be generated by the Project when construction of the unincorporated community of Centennial is complete and uses are occupied.

In addition to the identified planned area roadway projects, construction activities for other utility and renewable energy generation projects that would require crossing or run parallel to the Proposed Action or Alternatives and would occur within overlapping timeframes could cause cumulative temporary construction-related traffic impacts without the proper implementation of mitigation measures.

With proper coordination across the multiple planned projects that are identified, as applicable to the overlapping alternatives, cumulative temporary construction-related traffic impacts of the projects would be less than significant. The cumulative maintenance traffic and transportation impacts of the multiple area roadway, utility, and renewable energy generation projects would be minimal, as each project would likely generate only a nominal amount of new daily vehicle trips on the roadway network, which would be inconsequential to transportation operations. Therefore, cumulative traffic and transportation impacts during the maintenance period of the Proposed Action or Alternatives would be less than significant.

Visual Resources

Introduction

The increases in structure prominence as a result of the Project could result in significant cumulative impacts. The Project could also combine with the visual effects of other types of present and reasonable foreseeable actions, including generation projects, transportation and public facilities projects, and community and recreation developments that would contribute to the cumulative contrast with the existing landscape and resulting visual effects.

Impact Area

The BRRTP visual study corridor was used as the geographic boundary for the analysis of cumulative impacts to visual resources. The study corridor extends three miles on either side of the assumed centerlines of the Alternative routes. Within the ANF, the visual study corridor was expanded to a 10-mile-wide study corridor (five miles on each side of the centerline for each Alternative).

Present and Reasonable Foreseeable Actions

Projects identified within the BRRTP visual study corridor that could contribute to cumulative visual impacts include proposed transmission lines, transportation and public facilities projects, applications for generation projects like wind energy and solar farms, and large-scale community.

Refer to the table below for a list of projects in the visual study corridor that could contribute to cumulative impacts to visual resources.

TABLE 5-6. SUMMARY OF CUMULATIVE PROJECTS IN THE VISUAL STUDY CORRIDOR

Project Type	Projects
Transmission Projects	Antelope Transmission Project; Tehachapi Renewable Transmission Project
Generation Projects (Wind and Solar)	Absolutely Solar, Alpine Solar, Alta East Wind Project, Alta Wind Infill II Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project & Alta Addendum I/II, , Antelope Valley Solar Project, Antelope Solar 1 & 2, Antelope Solar Farm, AV Solar Ranch One, Barren Ridge Type II, Beacon Solar Energy Project, Bent Tree Wind Farm Type II, Blue Sky Wind Energy, Catalina Renewable Energy Project, Lower West Wind Energy Project, Oak Creek/Sun Creek Type II, Pacific Wind Energy Project, Pacific Wind Addendum, PdV Wind Energy Project/PdV Addendum, Power Partners Type II, Ridge Rider Solar Park Project, Rising Tree Wind Farm, Rosamond Solar Array, Rosamond Solar Project, Silverado Power (CUP 11-03, 11-05 & 11-07), Soledad Mountain Wind, Southwest Type II, Sunshine Solar, TUUSSO Solar Project, Tylerhorse Wind Project, Wildflower Green Energy Farm, Willow Springs Solar Array Project, Windstar Wind Energy Project, Proposed Wind and Solar projects on BLM land
Transportation and Public Facilities	California High Speed Rail; Pacific Pipeline Storm Relocation Project and Access Road Repairs; Antelope Valley Water Bank Project, Soledad Canyon Cemex Project
Community Development	Centennial Project

Cumulative Effects Evaluation

The Project, in addition to future development/disturbance throughout the study corridor, may increase direct and indirect impacts to visual resources. Cumulative visual contrast levels increase as man-made features are added, vegetation is cleared, or landforms are disturbed or altered. The resulting visual effects accumulate with each successive project constructed. Cumulative impacts may occur for the following:

- Scenic Attractiveness

- Sensitive Viewpoints (Residences, Recreation and Preservation Sites, Transportation Corridors, Visually Sensitive Cultural Sites)
- Compatibility with Agency Management Objectives

Visual impacts from the construction and operation of a 230 kV transmission line are typically direct. Cumulative visual impacts would result from the visibility of the Project and other actions from sensitive viewpoints and from the visual contrast of the Project and other actions with the inherent aesthetic values of the landscape.

The significance of the cumulative impact would depend on the level of visual contrast between the existing surroundings and the Project, the degree to which the scenic quality of the surroundings was diminished, visibility of the Project and other actions from sensitive viewers, and compatibility of contrast levels with Agency Management Objectives. Potential visual impacts tend to be greatest when there are high sensitivity levels coupled with close views and highly contrasting project elements.

All Alternatives, with the exceptions of portions of Alternative 2a and Alternative 1, would parallel existing transmission lines. Generally, the first manmade objects in a natural setting cause the most noticeable change because of the contrast of form, line, color and texture with the surroundings. Thereafter, each successive change becomes less noticeable than the first. The sum of all the changes (e.g., form, line, color and texture) is more evident to the casual observer. Likewise, the first transmission line in a natural area normally causes the greatest incremental change. The cumulative visual impact of a corridor increases with the addition of each new line. Hence, a multi-line corridor would be more visible at greater distances than a single transmission line because of the cumulative contrast with the natural landscape.

The Project would combine with visual effects of existing transmission lines and would cumulatively result in increased structure sizes that would cause a significant increase in structure prominence and alteration of landscape character, and a comparable decrease in the scenic attractiveness of impacted landscapes. Sensitive viewers with views of the existing transmission corridors are already impacted by the cumulative effects of the existing lines. These increases in structure prominence could be considerable and could result in substantial cumulative impacts.

All Alternative routes would contribute to cumulative effects on scenic attractiveness and to sensitive viewers. North of the ANF, cumulative impacts would be increased where the Alternatives would cross or be close to the Antelope Transmission Project, the TRTP, Beacon Solar Energy Project, the Alta Wind Energy Center, the Windstar Wind Energy Project, the PdV Wind Energy Project, the AV Solar Ranch One Project, other projects shown in Table 5-6, and any development on lands included in BLM applications for wind or solar generation. These projects would potentially result in structure contrast due to highly visible wind turbines, solar collectors, and transmission towers and conductors; and landform and vegetation contrast created by vegetation clearing and grading for access roads and construction areas. The California High Speed Rail and the Antelope Valley Water Bank Project would contribute to cumulative impacts in this area due to landform and vegetation contrast created by vegetation clearing and grading. The Centennial project would also result in landform and vegetation contrast due to clearing and grading and structure contrast due to the addition of large numbers of structures. Within the ANF, Alternative 1 would increase cumulative impacts to sensitive viewpoints where it would be close to the Pacific Pipeline Storm Relocation Project and Access Road Repairs. The project would potentially create landform and vegetation contrast due to vegetation clearing and grading.

Scenic Attractiveness

Cumulative impacts to scenic attractiveness would result from the visual contrast of the BRRTP and other actions with the inherent aesthetic values of the landscape. Scenic attractiveness, or scenic quality, was inventoried based on BLM criteria in accordance with BLM Manual Handbook 8410-1 (II. Scenic Quality Evaluation) on undeveloped private and BLM lands; scenic attractiveness/scenic quality data was available on the ANF lands, and referenced in those areas where applicable. While cumulative impacts would occur for Scenic Attractiveness Class C areas, these impacts would generally be low. Greater impacts would occur for Scenic Attractiveness Class A and Class B areas, which include a Class A area in the Castaic Lake area and Class B areas including the ANF, the unincorporated community of Leona Valley, the Ritter Ranch Area, the Antelope Valley California Poppy Reserve area, areas west and south of Castaic Lake, and areas between the ANF and the unincorporated community of Agua Dulce. The majority of cumulative impacts to scenic attractiveness would result from the combination of the BRRTP with the visual effects of existing transmission lines. Present and reasonably foreseeable actions combined with the BRRTP would contribute to cumulative impacts to Class B Scenic attractiveness, and include the Pacific Pipeline Storm Relocation Project and Access Road Repairs, and AV Solar Ranch One.

Sensitive Viewpoints

The BRRTP and other projects discussed above that would be visible from the same sensitive viewpoint or viewed in sequence along a sensitive transportation corridor would contribute to cumulative impacts for sensitive viewers.

Viewers that would potentially be impacted by the combination of the BRRTP and other actions are primarily residences. Viewers along State Highway 14, an eligible state scenic highway, would potentially be impacted by the Project in combination with development on lands identified in BLM applications for wind or solar generation and with the California High Speed Rail Project. Cumulative impacts would potentially occur for the Pacific Crest Trail due to views of Alternative 1 in combination with the PdV Wind Energy Project and the Antelope Valley Water Bank Project. Views from the Antelope Valley California Poppy Reserve would potentially be impacted by the Project in combination with the Antelope Valley Water Bank Project. Views from several sensitive roadways, including Lancaster Road and the Old Ridge Route, both Second Priority County Scenic Highways, would be potentially impacted by views of Alternative 1 in combination with the Centennial Project.

Within the ANF, Alternative 1 would increase cumulative impacts to sensitive viewpoints where it would be close to the Pacific Pipeline Storm Relocation Project and Access Road Repairs project, which would create landform and vegetation contrast due to vegetation clearing and grading. Sensitive viewpoints that would potentially be impacted include the Templin vista point; Ridge Route Road, a First Priority County Scenic Highway; and I-5, a Second Priority County Scenic Highway.

Agency Management Objectives

ANF Land Management Plan Part 3, S9 is as follows:

> **S9**: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.

The majority of the ANF that would be crossed by the Proposed Action and Alternatives is designated as having a High SIO. A transmission line is not typically compatible with the High SIO classification. Neither the existing transmission lines that would be paralleled by the Project within the ANF nor the Project are compatible with the established High SIO. Mitigation measures, listed in Chapter 4, may be effective at decreasing the visual contrast of the Project; however, they would not be adequate to achieve the High SIO. A Non-Specific Plan Amendment would be required for the BRRTP to cross High SIO areas of the ANF.

ANF Land Management Plan Part 2, ANF S1 is as follows:

> **ANF S1** -Pacific Crest Trail -Protect scenic integrity of foreground views as well as from designated viewpoints. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail.

Within the ANF, Alternative 1, Alternative 2, Alternative 2a, and Alternative 3 would contribute to cumulative impacts to the Pacific Crest National Scenic Trail where it would be crossed and where foreground views of the Project would occur. Neither the existing transmission lines that would be paralleled by the Project within the ANF nor the Project meet the Plan Standard. Mitigation measures, listed in Chapter 4, may be effective at decreasing the impact of the Project to the trail; however, they would not be adequate to meet the Plan Standard. A Project-specific ANF Plan Amendment would be required for the areas of the Project that would impact the trail.

Cultural Resources

Introduction

Cumulative effects on cultural resources are those effects that result from incremental impacts of the BRRTP when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts on cultural resources by actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, because cultural resources are non-renewable and the loss of California's heritage may result from the combined, incremental effects of many actions.

Impact Area

The impact area is Los Angeles County north of the San Fernando Valley and eastern Kern County. While prehistoric and historic Native American groups in Southern California did not have formal boundaries, the projects included in the cumulative analysis fall in a large enough area to encompass the traditional hunting and gathering territories of several groups. Likewise, the historic Euroamerican occupation in the area included a variety of activities, for example mining, ranching, and transportation, and population centers.

Present and Reasonably Foreseeable Actions

Present and reasonably foreseeable actions considered for the cumulative effects analysis are described in Section 5.2. Figure 5-1 illustrates the locations of the major projects.

Direct and Indirect Impacts Summary

Most ground disturbing activities constitute a direct impact to cultural resources. Preparation of the construction site and grading of access roads can directly impact cultural resources. Ground clearing can compact soils, crush artifacts, and alter prehistoric and historic features. Although some construction activities are temporary, damage to cultural resources resulting from these activities is permanent.

Indirect access-related impacts to cultural resources can be caused by improving existing roads or creating new roads into a previously remote area, thereby increasing pedestrian and vehicle traffic. The likelihood of unauthorized collection of artifacts and intentional, as well as inadvertent, destruction of structures or features increases with ease of access.

Indirect effects to cultural resources can also include erosion caused by nearby construction activities (e.g., a new road) that may not have directly impacted the resource.

Visual impacts may occur to some significant cultural resources, such as sacred sites, historic roads and some historic buildings, when modern industrial structures are introduced into the viewshed.

Finally, despite data recovery and other mitigation measures, there would likely be over time an unquantifiable cumulative loss of data about the past. Similarly, Native Americans may feel a cumulative loss of cultural identity as prehistoric archaeological sites are impacted by the projects described in Section 5-2.

Impacting Factors

Overall, present and foreseeable projects on federal, State, county, city, and private land in the impact area would probably encompass over 120,000 acres of development, although the extent of ground disturbance within each project footprint would vary widely, as would the potential for adverse visual effects on cultural resources. Table 5-7 briefly summarizes the range of impacts to cultural resources that would most likely be associated with different types of actions.

TABLE 5-7. POTENTIAL IMPACTS TO CULTURAL RESOURCES CAUSED BY DIFFERENT TYPES OF PROJECTS

Project Type	Potential Visual Impact	Potential Ground Disturbance Impacts
Transmission Projects	Height of towers	Access roads, vegetation clearance, structure placement, erosion
Generation Projects (Wind and Solar)	Height of wind turbines and expanse of solar panels	Access roads, vegetation clearance, turbine tower/panel foundations, erosion

Project Type	Potential Visual Impact	Potential Ground Disturbance Impacts
Transportation and Public Facilities	Possible with high speed rail	Installation of pipeline, excavation for water bank, erosion
Recreation and Community Development	Possible depending on number, sizes and types of building	Excavation, clearing and grading, erosion
Local Projects	Possible depending on specific facilities built	Excavation, construction of access roads, grading, clearing, erosion

Cumulative Effects Evaluation

The National Historic Preservation Act (NHPA); state CEQA guidance; and various agreement documents between the BLM, USFS, California State Historic Preservation Office (SHPO), and other agencies all provide specific guidance on how cultural resources should be managed in regard to proposed projects on federal, State, or private land in California. Therefore, it is assumed that all projects that could potentially affect cultural resources in the BRRTP cumulative impact area would be required to have some level of cultural resource documentation, evaluation, impact assessment, and, if necessary, mitigation. In many cases, potential impacts may be reduced or eliminated by avoiding significant cultural resources through project redesign or by implementing mitigation measures, such as data recovery. Despite mitigation efforts, cumulative impacts to cultural resources could result from the loss of irreplaceable cultural resources from development of over 225,000 acres in the BRRTP vicinity.

The projects listed in Section 5.2 have already complied or would need to comply with Section 106 of the NHPA or CEQA. Cultural resource surveys, evaluations of National Register and California Register listing eligibility, and other activities have likely been performed for the projects or would be performed in the future. The numbers and types of cultural resources potentially affected by these projects are unknown at this time. However, it is reasonable to assume that the overall density of cultural resources within these 225,000 acres would be comparable to the overall density of cultural resources in the BRRTP area. A cultural resource survey of the BRRTP action Alternatives has not yet occurred. However, any one of the four BRRTP action Alternatives could potentially affect cultural resources in areas covering approximately 1,500 to 2,000 acres (depending on the length of the 200-foot-wide ROW of the selected Alternative). This acreage would be less than one percent of the present and foreseeable development of 225,000 acres in the surrounding area. Therefore, construction of the BRRTP would make only a small contribution to the cumulative quantitative loss of cultural resources in the vicinity of the Project, particularly with implementation of the stipulations outlined in the Programmatic Agreement (PA) being prepared by the BLM, ANF, and California SHPO.

Wildfire and Fuels

Introduction

This section describes cumulative effects on wildfire and fuels that would be caused by implementation of the BRRTP in combination with other past, present and reasonable future projects.

Impact Area

The cumulative effect impact area encompasses the entire BRRTP fireshed. Cumulative effects are evaluated to the geographic extent of the fireshed boundary due to similar wildfire risks across the fireshed.

Present and Reasonable Foreseeable Actions

Projects identified within the BRRTP fireshed that could contribute to wildfire- and fuels-related cumulative impacts include proposed energy infrastructure projects, community development projects, and landscape management projects. Refer to Figure 5-1 for a map of major cumulative projects within the Project area. The following projects have been specifically identified for this cumulative effects analysis:

1) Tehachapi Renewable Transmission Project: This project would involve new and upgraded transmission infrastructure along approximately 173 miles of new and existing rights-of-way (ROW) in southern Kern County, portions of Los Angeles County, including the ANF, and the southwestern portion of San Bernardino County, California to integrate new wind generation.

2) Antelope Transmission Project: The project consists of a 25.6-mile 500 kV transmission line between Southern California Edison's existing Antelope Substation (City of Lancaster) and Pardee Substation (City of Santa Clarita).

3) Pacific Pipeline Storm Relocation Project and Access Road Repair: This project would relocate several miles of crude oil lines to stable ground locations within ANF.

4) Centennial Development Project: The project, located in the unincorporated community of Centennial, would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community of up to 23,000 dwelling units and 14 million total square feet of non-residential development.

5) Tule Ridge/South Portal Project: This project is a USFS proposed fuel reduction and re-establishment of a fuel break in ANF.

6) Jupiter Fuel Break Project: This USFS project begins southwest of the unincorporated community of Green Valley and travels east bisecting Jupiter Mountain before heading south down to Bouquet Reservoir. The purpose of the project is to re-establish an existing fuel break.

Cumulative Effects Evaluation

The ANF has a considerable history of wildfires and serves as a wildland-urban interface to unincorporated communities on the fringe of the forest boundary (Green Valley, Elizabeth Lake, and Lake Hughes). These unincorporated communities are particularly susceptible to fire under conditions of wind, and would be vulnerable to ANF wildfires due to their proximate location.

Generally, fires are fought at locations where there is ground-based access to wildlands by road, and by aerial access to wildlands where obstacles, such as transmission lines, do not exist. A new transmission line that is not located adjacent to an existing transmission line effectively creates a new barrier to firefighting effectiveness in a new location. Some of the proposed Alternatives would be in areas where there currently are no transmission lines or towers. Alternatives 1, 2a and 3 of the BRRTP, in combination with the Antelope Transmission Project, which is currently being constructed, and the approved—but not yet constructed—TRTP, would result in impacting the effectiveness of firefighting by introducing new transmission lines and structures in areas that currently are undeveloped. Therefore, there would be an incremental contribution to the effectiveness of firefighting in areas of new and/or additional transmission lines.

Several developments are in various stages of planning and implementation within the BRRTP fireshed. Development within the fireshed increases the human influence and activity adjacent to and within wildlands, thereby increasing the risk of wildfire. Increased travel on roadways can contribute to ignitions that result in fire hazards. Construction and maintenance activities also can result in ignitions in areas that are considered to have moderate to very high fire sensitivity. Specifically, sparks generated by idling construction vehicles, welding equipment, power tools, or other sources of human-influenced ignition (e.g., cigarette smoking) could accidentally ignite dry and overgrown vegetation located in or adjacent to the Project ROW or staging areas, resulting in a wildfire.

Another source of wildfire hazards that could occur with the Proposed Action and Alternatives in conjunction with the cumulative projects included in this evaluation is an increase in the distribution of non-native plant species within the BRRTP fireshed. The Project includes mitigation measures that assist in the discouragement of the spreading of non-invasive plant species (Mitigation Measure BIO-2a, Prevent the spread of invasive weeds). Similarly, the Antelope Transmission Project and the TRTP contain mitigation that discourages the spreading of non-native plant species. Similar mitigation measures are expected for any reasonably foreseeable developments considered in the cumulative analysis. However, not all activities that result in plant dispersion can be regulated. Non-native plant species can be spread through human travel on roadways and recreational hiking in wildland areas, both of which can spread non-native plant seeds in soils compacted in tire treads and in the soles of hiking boots. Additionally, in areas where there may be helicopter mitigation, there is the potential for the transport of seeds of non-native species. While mitigation would be implemented into the Project, it is not possible to totally eliminate the potential for non-native species to be introduced into the cumulative project area; thus, this impact would be considered cumulatively adverse.

In relation to the existing fire sensitivity in the fireshed, it should be noted that two fuel reduction programs, the Jupiter Fuel Reduction Project and the Tule Ridge/South Portal Fuel Reduction Project, are currently being implemented in the fireshed, both of which have beneficial impacts in relation to wildfire suppression and firefighting effectiveness.

Only Alternatives 2 and 2a would be directly impacted by the Tule Ridge/South Portal Project. The ongoing implementation of these two fuel reduction projects would assist in reducing the overall wildfire sensitivity in the fireshed, especially in areas where wildlands are adjacent to urban development in the vicinity of the unincorporated community of Green Valley.

To minimize the adverse and cumulative impacts of the Project, mitigation measures, as described in Chapter 4, would be applied to the Proposed Action or Alternatives. No additional mitigation is available to further reduce the Project's contribution to significant cumulative effects on wildfire prevention and suppression.

Electrical Effects

The electrical effects associated with the Proposed Action or Alternatives would occur in the immediate vicinity of the BRRTP transmission line ROW. These impacts would be similar to the impacts of the existing LADWP and SCE transmission lines, which the Project would be adjacent to. Due to the nature of electric fields, these impacts would not be additive, and the Proposed Action or action Alternatives would not result in greater electrical fields in areas of existing lines. As distinguished from electric fields, magnetic fields from the Proposed Action or action Alternatives and other future projects that entail construction and operation of new transmission lines adjacent to existing lines would be additive resulting in a changes to existing magnetic fields. In this instance, the magnetic field from the two facilities would interact in a manner such that the cumulative impact would be a change in the magnetic field at the edge of the Project ROW. Depending upon a number of variables, this magnetic field change could result in either an increase or decrease in the field strength. The Electric and Magnetic Fields Management Plan (see Appendix E of this Final EIS/EIR) addresses mitigation techniques to reduce the magnetic fields at the 230 kV transmission line edge of the ROW, a minimum of 15% of which meets CPUC guidelines for "no cost" or "low cost" design considerations.

Social and Economic Conditions

Introduction

This section describes cumulative effects on social and economic conditions that would be caused by implementation of the BRRTP in combination with other past, present, and reasonable future projects.

Impact Area

The geographic extent of the cumulative impacts analysis for Socioeconomics is southwestern Kern County and northern Los Angeles County, since this area is the likely area from which local workers would be drawn for the Project and employment indirectly created, and in which most workers who in-migrate would reside. Impacts in this area on employment, population, housing (particularly transient housing), and public services arising from the Proposed Action and its Alternatives are expected to be insignificant, with potential minor impacts on transient housing (hotels, motels, and RV parks).

Present and Reasonable Foreseeable Future Actions

This labor market area currently has significant unemployment, with construction employment having declined noticeably. With a relatively slow recovery in employment expected over the next two years, in the absence of large construction employment increases, some slack in the construction labor market is expected.

Numerous other projects have been proposed and/or are pending with the county and city jurisdictions in the region, but in general these projects are individually small, and can be considered part of general overall growth in the area, already included in the socioeconomics baseline population and employment projections. It is the larger projects (e.g., Antelope Transmission Project, TRTP) that may be considered "additional" potential developments that would materially affect baseline projections. In addition, these would primarily serve export markets, and thus could have noticeable ripple effects in the local economy, entailing further increases in population and demand for housing and public services.

A number of these potentially medium-to-large construction projects have been identified whose construction labor demands are unknown, or which may be medium to large (of unknown, or approximately equal or greater, construction worker demand). These projects are detailed in Section 5.2, Cumulative Projects List.

Cumulative Effects Evaluation

Operation impacts of the Proposed Action and Alternatives have previously been assessed as unnoticeable (see Chapter 4, Section 4.2.13) because operation would entail only a handful of workers. Therefore, no cumulative impacts of operation are expected. However, its construction impacts would be noticeable, although not significant by themselves. If construction occurs at the same time as one or more of the projects listed in Section 5.2, the combined impacts of construction worker in-migration, and those of the projects' ripple effects, could be noticeable. These projects would have the potential to impact existing development, and could be cumulatively considerable.

The potential cumulative impacts to social and economic conditions would be primarily temporary. Construction workforces for identified projects would be significantly larger than their operations workforces, and construction would occur over a relatively short term (generally between one and three years).

The Project area is expected to have availability of construction labor due to the fact that, in recent years, construction employment has fallen by several thousand workers. Assuming that all projects in Table 5-1 were constructed at once, and that about one construction worker per MW was needed, only about 6,800 jobs would be created. This would be under the amount by which construction employment fell in the Project area from 2007 to 2011, and the employment demand increase would be spread across several years. In light of the loss of employment and population in recent years, local rental and ownership housing supplies would be expected to be adequate to accommodate population and employment increases. Thus, the expected resurgence of construction employment demand in the area would be viewed as a positive cumulative impact.

Potential adverse cumulative impacts would be created on transient housing such as hotels and RV capacity. The economic downturn in the region from 2007 to 2010 has likely decreased demand for transient housing, which is mostly located in Lancaster, Palmdale, California City, Mojave, Tehachapi, and Santa Clarita. Given the existence of excess capacity, the cities are well-situated to accommodate increasing demand. However, in-migrating construction workers generally prefer hotels and RV parks closest to their work locations, and many of the cumulative projects are located in the more rural, undeveloped portions of the Project area. Few hotels and RV parks are in these rural areas. Thus, some rural hotels and RV park facilities may experience temporary shortages of supply. Market mechanisms such as price adjustment (some increased cost for all visitors) and some increase in supply can be expected to ameliorate shortages. In addition, sharing of RVs and hotels could increase. However, the contribution of the Project to these cumulative impacts would be small, owing to the Project's relatively small construction and operation employment and associated socioeconomic impacts.

The contribution of the Project Alternatives to any cumulative impacts that may occur would be similar to, but slightly higher than, the contribution of the Proposed Action to cumulative impacts. However, the difference would likely be very minor, because the Alternatives all would have only slightly higher work forces and local purchases than the Proposed Action. Since the cumulative impacts of the Proposed Action would be insignificant, the cumulative impacts of Project Alternatives are also assessed as insignificant.

5.3.2 NATURAL ENVIRONMENT

Biological Resources

Introduction

Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

Impact Area

The region of influence for BRRTP's biological cumulative effects is defined as any project within five miles of the Proposed Action or Alternatives, as well as any large projects in the wider vicinity (i.e., solar development, wind development). This five-mile boundary is assumed to account for impacts to most plants' dispersion area and most animals' migration corridors or individual home ranges. In the case of the California condor, which will often fly very long distances while foraging, a twenty-mile region of influence would be implemented.

Past, Present and Reasonable Foreseeable Actions

The Cumulative Projects Map (Figure 5-1) illustrates the locations of the major cumulative projects in the BRRTP area. The Cumulative Project List, described in Section 5.2, includes: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects.

It is expected that BRRTP's cumulative effects would apply to both special-status plant and wildlife species. Special-status species are defined as any species currently listed, formally proposed for listing, or a candidate for listing as endangered or threatened under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA); any species designated as sensitive, of special concern, fully protected, or as a management indicator species by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), or BLM; any species listed by the California Native Plant Society (CNPS) as List 1 or 2; or any species otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act. Two sensitive plant species were observed within the ANF, while none were identified on areas surveyed outside the ANF. However, there may be additional sensitive plants on the ANF or outside the ANF that may be affected by BRRTP, including State or federal listed species, which were not identified during surveys or may occur on lands not surveyed. These species may in turn be affected by other past, present, or future projects such as those described previously, especially those which occur in the ANF. Additionally, there is the potential for numerous special-status animals to occur and be affected by BRRTP. Many of these are known to occur within the Project area due to recent observations, and some of them are listed at the State and/or federal level, such as the desert tortoise (*Gopherus agassizii*) in the Mojave Desert, the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) in Bouquet Creek, or the coastal California gnatcatcher (*Polioptila californica californica*) in the coastal sage scrub at the southern end of BRRTP. All three of these species, along with many other special-status terrestrial, aquatic, and/or aerial species, may be impacted by the cumulative effects of BRRTP with other projects in the area that require similar actions over these species' ranges.

Numerous energy infrastructure, wind and solar generation projects are in various stages of planning and development within the vicinity of the Project as described in Section 5.2. Table 5-8 summarizes which projects may cumulatively impact the resources along the Alternatives.

TABLE 5-8. TRANSMISSION AND GENERATION WITHIN FIVE MILES OF ALTERNATIVES

Project	Alternative
Absolutely Solar Project	2, 2a, 3
Alpine Solar Project	1
Alpine Solar Project Addition	1
Alta East Wind Project	1, 2, 2a, 3
Alta-Oak Creek Mojave Wind Energy Project	1, 2, 2a, 3
Antelope Solar 1 Project	2, 2a, 3
Antelope Solar 2 Project	2, 2a, 3
Antelope Solar Farm Project	2, 2a, 3
Antelope Transmission Project--Segment 1	3
Antelope Transmission Project--Segment 2	3
Antelope Transmission Project--Segment 3	1, 2, 2a, 3
Antelope Valley Solar Project	2, 2a, 3
AV Solar Ranch One	2, 2a, 3
Avalon Wind Project	1, 2, 2a, 3
Barren Ridge Type II Project	1, 2, 2a, 3
Beacon Solar Energy Project	1, 2, 2a, 3
Bent Tree Wind Farm Project	1, 2, 2a, 3
Blue Sky Wind Energy Project	2, 2a, 3
Catalina Renewable Energy Project	1, 2, 2a, 3
Del Sur Solar Project	2, 2a, 3
Golden Square Type II Project	2, 2a, 3
Lower West Wind Project	1, 2, 2a, 3
Monte Vista Solar Array	1, 2, 2a, 3
Morgan Hills Wind Project	1
Oak Creek – Sun Creek Type II Project	1, 2, 2a, 3

Project	Alternative
Pacific Wind Energy Project	1
Pacific Wind Infill Project	1, 2, 2a, 3
PDV Wind Energy Project	1
Pine Tree Wind & Pine Tree Solar Project	1, 2, 2a, 3
Power Partners Type II Project	1
RE Distributed Solar Project	1, 2, 2a, 3
Ridge Rider Solar Park Project	1, 2, 2a, 3
Rising Tree Wind Farm Project	1, 2, 2a, 3
Rosamond Solar Array Project	2, 2a, 3
Rosamond Solar Project	1, 2, 2a, 3
Ruby Solar Project	2, 2a, 3
Silverado Power Project	2, 2a, 3
Soledad Mountain Wind Project	1, 2, 2a, 3
Southwest Type II Project	1
Sunshine Solar Project	2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 4	1, 2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 5	2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 10	1, 2, 2a, 3
TUUSSO (TA High Desert) Project	2, 2a, 3
Tylerhorse Wind Project	1
Wildflower Green Energy Farm Project	2, 2a, 3
Willow Springs Solar Array Project	2, 2a, 3

Direct and Indirect Impacts Summary

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those that occur at the same time and place as BRRTP or the surrounding projects mentioned in Section 5.2. Indirect impacts are defined as those which could be caused by BRRTP or surrounding projects, but which would occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to BRRTP, not all may necessarily apply to each project listed in Section 5.2. However, any common direct or indirect impacts between BRRTP and any of the above-listed projects would exert cumulative effects of varying degrees on certain species or groups of species.

Direct Impacts

- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of special-status plants or animals (dust deposition on or crushing of plants, disturbance of an animal's daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife).

Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Disturbance of special-status plants (loss of plant vigor due to dust or mud deposition);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

Cumulative Effects Evaluation

Cumulative effects are evaluated below for each receptor or group of receptors that may be affected by BRRTP and surrounding projects. Because of the common susceptibility that plants have to potential project impacts, they are grouped together into one category. Wildlife are broken into three categories which consist of terrestrial (including burrowing), aquatic, and aerial species. Plants and animals which are listed as Endangered, Threatened, or Candidate species according to State or federal regulations are individually separated into their appropriate categories above. Plants and animals which are sensitive according to BLM, CNPS, CDFG, or USFS are grouped into the general plants, terrestrial animals, aquatic animals, and aerial animals categories.

Plants

Slender Mariposa Lily (*Calochortus clavatus var. gracilis*) – The USFS sensitive slender mariposa lily has been identified on all Alternatives. Cumulative effects may be projected onto this species with the combined influence of BRRTP and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP's Power Plant Two (PP2) Tailings Removal Project, SCE's Antelope Transmission Project (ATP), and SCE's Tehachapi Renewable Transmission Project (TRTP) on Alternatives 2, 2a and 3. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, would relocate several miles of crude oil lines to different locations and would likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010b). It is unknown if this would impact the 12 individuals that were identified on Alternative 1 during BRRTP botanical surveys (POWER 2010c), but would still result in a loss of habitat.

LADWP's PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, resulted in the removal of 150 individual slender mariposa lilies from its project area. However, while 400 individuals and nearly 1,700 individuals—with some overlap—were located on Alternative 2 during BRRTP botanical surveys in 2008 and 2009, respectively (POWER 2008b, POWER 2010c), none of these were part of the individuals removed during the PP2 Tailings Removal Project. An estimated 5,000 slender mariposa lilies, as well as several acres of suitable habitat, were impacted by SCE's ATP, located in between Alternatives 2, 2a, and 3. Over 400 individuals were located on Alternative 3 during BRRTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). The effects from these three projects would exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall local population and also removing and degrading appropriate habitat.

There are currently 54 recorded occurrences of this species within the California Natural Diversity Database (CNDDB), including 51 in Los Angeles County and three in Ventura County, and 42 records in the Jepson Online Interchange, all from Los Angeles County. All CNDDB records are presumed extant, and 36 of these are from within the last decade. The largest of these is a cumulative 31,370 individual plants from numerous survey areas on Newhall Ranch in 2003; however, most other records in CNDDB are smaller than those seen during 2008 BRRTP surveys, although the total numbers observed in BRRTP surveys in 2008 and 2009 are composed of several dozen individually mapped populations. As such, the total number of slender mariposa lilies located within the Alternative 2 corridor represents a large amount of individuals from this species relative to many of the other documented occurrences. However, because the large number of slender mariposa lilies in the BRRTP Alternative 2 corridor is composed of many smaller populations ranging from one to 1,000 individuals, the impact that BRRTP construction would have on the species as a whole is dependent on which specific populations would be impacted within the Project Area.

SCE's TRTP, located east and southeast of BRRTP, estimated that it was unlikely for slender mariposa lily to be present within TRTP Segments 4 and 5, but that individuals could possibly be present on Segments 6 and 11 due to nearby populations (Aspen 2009). Both of the latter TRTP segments are located within the ANF south of California SR 14. Loss of individuals or of habitat in these areas would exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall regional population and/or habitat.

Several other projects are located in the vicinity of Alternatives 1, 2, and 2a, including the construction of the unincorporated community of Centennial, California partially within Alternative 1 north of ANF by Centennial Founders, LLC; LADWP's sediment removal within Castaic Creek; LADWP's repair of the Elizabeth Tunnel located west of Alternatives 2 and 2a; the USFS weed removal within Bouquet Creek; and various fuel treatment projects. The Centennial Project construction is unlikely to have any impact on slender mariposa lily because slender mariposa lily is not known to grow on the northern slopes of the San Gabriel and Sierra Pelona Mountains and is unlikely to occur within this project area (Aspen 2009, USFS 2010a). The sediment removal within Castaic Creek which occurred in fall 2009 had no effect on slender mariposa lily because the habitat that was removed was unsuitable for this species. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within Bouquet Creek by USFS staff had no effect on slender mariposa lily because there was no suitable habitat for it within the project area.

Nearly 3,000 acres of ANF land in the vicinity of Tule Ridge and South Portal Canyon are expected to undergo fuel treatment in response to a recent fire in 2008 (USFS 2009). Treatments would consist of mastication, crushing, cutting, piling, and burning of vegetation. While no slender mariposa lilies were identified along Tule Ridge Road, Burns Road, or Ruby Clearwater Fire Road, it is likely that habitat for this species would be impacted, if not previously unidentified individuals as well. Vegetation removal at various plantations in the ANF (USFS 2010) resulted in more than 100 slender mariposa lilies being impacted at the Hollow Tree and Artesian Springs Plantations (USFS 2011).

While no botanical surveys were conducted on new 230 kV circuit corridor and reconductoring corridor south of Haskell Canyon, there may be existing habitat for or individuals of this species on these corridors. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Compensate for habitat modifications per coordination with responsible resource agencies), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on slender mariposa lily between BRRTP and past, present, and foreseeable projects would be significant on all the Alternatives.

Short-joint Beavertail (*Opuntia basilaris var. brachyclada*) – The USFS and BLM sensitive short-joint beavertail has been identified on all Alternatives. Cumulative effects may be projected onto known populations of this species with the combined influence of BRRTP and the construction of the Centennial Project and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP's PP2 Tailings Removal Project, SCE's ATP, and SCE's TRTP on Alternative 2, 2a and 3. Centennial Founders' construction of the Centennial Project would likely remove short-joint beavertail habitat, although it is unknown if any individual plants occur within its project area. It is located around SR 138 where the ANF gives way to the Antelope Valley. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, would relocate several miles of crude oil lines to different locations and would likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010b). It is unknown if this would impact the 40 individuals that were identified on Alternative 1 during BRRTP botanical surveys (POWER 2010c), but it would still result in a loss of habitat.

LADWP's PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, did not have any identified individuals of this species, although suitable habitat was removed during the project. During 2008 and 2009 BRRTP botanical surveys, 84 short-joint beavertail individuals were identified along Alternatives 2 and 2a (POWER 2008b, POWER 2010c) which would likely be affected by BRRTP construction, resulting in a combined effect of habitat loss in both areas. No short-joint beavertails were located during botanical surveys for SCE's ATP (LSA 2007e, LSA 2007f, LSA 2007g), but appropriate habitat for this species was impacted during construction. Five individuals were located on Alternative 3 during BRRTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). SCE's TRTP, located east and southeast of BRRTP, estimated that it was likely for short-joint beavertail to be present within TRTP Segment 5, and that individuals are present on Segments 6 and 11 (Aspen 2009). TRTP Segment 5 originates in the southern section of ANF and runs adjacent to Alternative 3; TRTP Segments 6 and 11 are located within the southern section of ANF. Loss of individuals or of habitat in any of these areas would exert a cumulative effect with BRRTP on short-joint beavertail by reducing the overall local and regional population and/or habitat.

Several projects are located in the Antelope Valley and Mojave Desert near the northern portion of all Alternatives. While no specimens are known from these areas, these project areas may be within habitat which is suitable for short-joint beavertail to grow. These projects include the Beacon Solar Energy Project, Pine Tree Solar Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Valley Water Bank Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, and numerous parcels of land for which BLM has received applications to build wind or solar generation facilities. For projects which have available biological resource documents, these projects are not known to have short-joint beavertail present, but they may contain suitable habitat, and construction would affect that habitat by removing or degrading it for project sites. The California High Speed Rail runs along the edge of the southern section of ANF and along SR 14 between the northern and southern ANF sections; while there may be short-joint beavertail individuals and/or habitat located in this area along the edge of ANF, full biological studies of the rail line have not been conducted yet.

Some additional projects are located in the vicinity of Alternative 1, 2, and 2a, including LADWP's sediment removal within Castaic Creek; LADWP's repair of the Elizabeth Tunnel; and USFS weed removal within Bouquet Creek. The sediment removal within Castaic Creek, which occurred in fall 2009, had no effect on short-joint beavertail because the habitat that was removed was not appropriate for this species to grow in. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within Bouquet Creek by USFS staff had no effect on short-joint beavertail because there was no suitable habitat for it within the project area.

While no botanical surveys were conducted on new 230 kV circuit corridor and reconductoring corridor south of Haskell Canyon, there may be existing habitat for or individuals of this species on these corridors. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on short-joint beavertail between BRRTP and past, present, and foreseeable projects would not be significant if properly mitigated.

Non-listed Special-status Plant Species – Many special-status plant species may occur in the BRRTP area, only two of which were identified during 2008, 2009, and 2010 botanical surveys. These include species listed as "sensitive" by the USFS and BLM and those listed by the State and the California Native Plant Society. Specific sensitive plant species and species of special concern that may occur in the Project area are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR. Large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted. Direct impacts that may occur to these species include habitat loss and degradation due to construction activities and disturbance due to dust deposition or crushing (but not removal) of vegetation. Dust deposition may lead to reduced plant vigor if the plants are unable to sufficiently photosynthesize. Indirect impacts to this species include soil compaction from excessive activity and spread of non-native weed species as a result of seeds stuck to vehicles. Soil compaction may prevent sufficient water from reaching the roots of plants, which can lead to mortality or a reduction in vigor of the plant.

Non-native weed species tend to follow disturbance and can spread through vehicle tires or be carried by the wind from nearby established populations. With the amount of disturbance that may occur with this Project where new roads or tower sites are created, there could be a potentially large amount of non-native weed seeds spreading into bare or disturbed areas. Surrounding projects, whether large or small, result in some quantity of habitat loss and/or spread of non-native weeds, which in turn makes it difficult for native plants to establish and can affect whole habitats.

Several transmission line, wind, or solar energy projects occur within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Pacific Wind Energy Project, Pahnamid Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, RE Distributed Solar Project, TRTP, ATP, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, and the Grapevine Creek Streambed Diversion Project. All of these projects have or would result in vegetation loss and, although efforts are made to identify special-status plant species for avoidance before construction begins, some individuals may have been or may be missed, resulting in individual losses. It is not expected that any of these individual projects would lead to a change in listing status of any of these plants, but considered cumulatively they may be more significantly affected in local or regional populations of species.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). However, large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted along all the Alternatives, especially in more dense or inaccessible chaparral. Therefore, cumulative effects on special-status plant species between BRRTP and past, present, and foreseeable projects may be significant.

Non-native Invasive Plant Species – Numerous species of non-native invasive plants were identified within the Project area during 2008, 2009, and 2010 botanical surveys (POWER

2009e). These plants can destroy wildlife habitat, threaten listed species and native plants, and increase soil erosion and ground water loss. The plants that were identified within the Project area during surveys were split into categories composed of high-risk noxious weed species, moderate-risk noxious weed species, and low-risk noxious weed species or species for which there is relatively little information. High-risk species have high impacts on physical processes, plant and animal communities, and vegetation structure of the environments in which they establish. They typically experience moderate to high rates of dispersal and establishment and most have wide ecological distribution ranges. Moderate-risk species have clear impacts on physical processes, plant and animal communities, and vegetation structure of the communities in which they establish, but not as severe as the high-risk species. They generally experience moderate to high dispersal rates, with their establishment success dependent on ecological disturbance. Ecological amplitude and distribution may range from restricted to extensive.

Low-risk species have more minor impacts on a statewide level than either the high- or moderate-risk species. In some cases there is not enough information known about the species to justify an elevation into either of the other categories. They generally experience low to moderate dispersal rates, and although their ecological amplitude and distribution may be limited, these species may still be problematic on local levels. A greater discussion of BRRTP-specific weed species, including which categories they are in, is in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR.

Several transmission line, wind, or solar energy projects are within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Pacific Wind Energy Project, Pahnamid Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, RE Distributed Solar Project, TRTP, ATP, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, the Tule Ridge, Green Valley, and Leona Divide Fuelbreaks, the Hollow Tree and Artesian Springs Tree Plantation Fuel Removal projects, and the Grapevine Creek Streambed Diversion Project.

For any of these projects, disturbance related to construction or maintenance has the potential to increase infestations of noxious weed species, particularly if vegetation is cleared, because during regrowth the native species would be competing to re-establish at the same time that the noxious weed species are attempting to dominate the cleared area. Additionally, vehicles and personnel can carry weeds on-site with them and along access roads, increasing the likelihood of spreading noxious weed species into areas where they may not have been prevalent or increasing the size of existing local populations of noxious weeds. Some sites may contain existing noxious weed seed banks which would contribute to the spread of weed species as sites are disturbed. Some of these projects may be on existing weedy sites and construction would likely not contribute to a significant increase in weed abundance, but sites that are dominated by native plant species may be more susceptible to shifts in species composition and dominance.

However, the USFS Bouquet Creek Weed Removal Project focused on the removal of seven noxious weed species from selected sections of Bouquet and San Francisquito Creeks, which improved habitat quality and health for not only native plants but also several special-status wildlife species which could or do occur within the habitat present in these creeks.

Mitigation measures that would reduce short-term and long-term effects from non-native invasive plant species include mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). However, given the multitude of ground-disturbing projects in the vicinity of all the Alternatives and difficulty in weed eradication, cumulative effects from non-native invasive plant species between BRRTP and past, present, and foreseeable projects would be significant.

Terrestrial Wildlife

Mohave Ground Squirrel (*Spermophilus mohavensis*) – The State Threatened Mohave ground squirrel has been identified on the northernmost portion of all Alternatives, and may also occur just south of this area. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP and those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, RE Distributed Solar Project, Rising Tree Wind Project, Antelope Valley Water Bank Project, AV Solar Ranch One, California High Speed Rail, TRTP, numerous parcels of land for which BLM has received applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects.

The Beacon Solar Energy Project identifies several project mitigation measures for Mohave ground squirrel, including a measure for a Mohave ground squirrel translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for Mohave ground squirrel habitat loss (CEC 2010). Despite a 2006 CNDDB record within the project area, protocol surveys conducted for Mohave ground squirrel throughout the Alta-Oak Creek Mojave project area did not locate any individuals (Kern County 2009). However, habitat is present on all three sections of the project area which would be affected by construction. Should Mohave ground squirrels be present within the Alta-Oak Creek area, burrow crushing and mortality could also occur.

Within the project area for the PdV Wind Energy Project, although Mohave ground squirrel was determined to be absent based on protocol surveys, 921 acres of Mojave creosote bush within the site could support this species (Kern County 2007). SCE determined for TRTP that Mohave ground squirrel had a possibility of occurring on TRTP Segment 4, and was present on Segment 10, which runs near Alternative 1. TRTP is expected to result in habitat loss and fragmentation for the Mohave ground squirrel, along with crushing of burrows and vehicle collisions. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the Mohave ground squirrel. Because these projects would require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that would be removed or degraded by construction of these various projects.

Construction of BRRTP, ATP, and TRTP would result in minor amounts of Mohave ground squirrel habitat fragmentation. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing ground squirrels to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Mohave ground squirrels would still be able to move around the facilities and possibly through them, as well, depending on any fencing used around these sites.

Loss of individuals or habitat in these areas would exert a cumulative effect on Mohave ground squirrel by reducing the local population size or removing suitable habitat. The intensity of the cumulative effect is increased due to the fact that these projects would be ongoing for several years. The CNDDB lists 302 recorded occurrences of Mohave ground squirrel in California, 301 of which are presumed extant; 50 of these occurrences are from the last decade. Leitner (2008) presented metadata showing the distribution of trapping efforts, positive and negative, for Mohave ground squirrel throughout its historic range from 1998 to 2007, and also discusses regional records in the historic range. According to Leitner (2008), from 1998 to 2007, 52 grids were surveyed according to protocol requirements in the vicinity of the desert portion of Alternative 2 in Los Angeles County. The closest of these survey grids to Alternative 3 is 2.5 miles east; the closest to Alternative 2 is 10 miles east; the closest to Alternative 1 is 13 miles southeast. The species was not detected during any of these surveys.

Edwards Air Force Base (AFB), east of the Project area, has conducted surveys for Mohave ground squirrel, detecting individuals at six of 40 grids from 2003 to 2007 in the eastern portion of the base. The closest of the positive detections within Edwards AFB is 26 miles southeast of Alternative 1, 25 miles east of Alternative 2, and 27 miles northeast of Alternative 3. An additional 20 incidental observations of the species on Edwards AFB are included in Leitner (2008), concentrated in the central area of the base and in the eastern portion of the base in the vicinity of the positive trapping efforts. The closest of these observations to BRRTP is 20 miles southeast of Alternative 1, 18.5 miles southeast of Alternative 2, and 23 miles northeast of Alternative 3. Additional trapping southwest of the unincorporated community of Mojave has been conducted, and proposed routes of both Alternatives 1 and 2 span over several of these survey grids, which are mostly focused around the Tehachapi Wind Farm. These trapping efforts have not yielded any positive results, although two recent (2006) observations are recorded in CNDDB in the general area, one of which is 0.5 mile from Alternative 2 (Leitner 2008, CDFG 2011).

In his paper, Leitner (2008) identifies four core extant populations of Mohave ground squirrel based on incidental observations, regional surveys, and protocol survey grids, as well as several other non-core populations. While no populations are described for the BRRTP area, Leitner (2008) shows the Edwards AFB Core Area east of the BRRTP and the Little Dixie Wash Core

Area north of the BRRTP, within and north of Red Rock Canyon State Park. There are also two other non-core populations that Leitner shows as being east of SR-14 and north of SR-58. The closer of these is located within and just outside of the Kern County Desert Tortoise Natural Area, four miles east of Alternative 2 at its closest point but separated from BRRTP by SR-14. Thus, if any population(s) of Mohave ground squirrel is present within the BRRTP area, it is likely small given the extensive amount of trapping that has been conducted in the general area and the general lack of recorded occurrences west of SR-14 as shown by Leitner (2008) and CNDDB (CDFG 2011). Therefore, because any population living in the BRRTP area is likely relatively small, any impacts to Mohave ground squirrels or their habitats due to BRRTP may have a large effect in this immediate area. However, the impact that BRRTP would have on populations in the general region—the aforementioned local core and non-core populations—and throughout the Mohave ground squirrel's range is relatively small in comparison.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox). Cumulative effects on Mohave ground squirrel between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant, if properly mitigated.

Desert Tortoise (*Gopherus agassizii*) – The State and federal Threatened desert tortoise is known to be present on the northernmost portion of all Alternatives and may also occur just south of this area. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP and those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta Wind Energy Center, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Valley Water Bank Project, AV Solar Ranch One, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, California High Speed Rail, numerous parcels of land for which BLM has received applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects.

The Beacon Solar Energy Project identifies several project mitigation measures for desert tortoise, including a measure for a desert tortoise translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for desert tortoise habitat loss (CEC 2010). Protocol desert tortoise surveys conducted for Alta-Oak Creek located two individual tortoises, scattered desert tortoise sign, and 8,436 acres of suitable habitat within the project area (Kern County 2009). The project is expected to have impacts to desert tortoise that could include mortality by vehicle collision, habitat loss and degradation, increased predation, and burrow crushing.

Within the project area for the PdV Wind Energy Project, the desert tortoise was determined by literature review, consultation, and surveys to be absent (Kern County 2007). While there are 5,555 acres of suitable desert tortoise habitat on the project site, it is expected that only 276.8 acres would be affected, leaving over 95% of the project area with habitat. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the desert tortoise. Because these projects would require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that would be removed or degraded by construction of these various projects.

Construction of BRRTP, ATP, and TRTP would result in minor amounts of habitat fragmentation for desert tortoise. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing tortoises to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Tortoises would still be able to move around the facilities.

Loss of individuals or habitat in these areas would exert a cumulative effect on desert tortoise by reducing the local population size or removing suitable habitat. The CNDDB lists 263 recorded occurrences for desert tortoise within California (CDFG 2011); only 23 of these are from Kern County and only one is from Los Angeles County. Fifteen of these 24 occurrences—all in Kern County—are from the last ten years, and all 24 are presumed extant. Of these, five are from the BRRTP area within the last ten years and three are of live specimens (CDFG 2011); one of these was an identification made by POWER Engineers, Inc. (BRRTP Biological Technical Report 2011). Tortoise population surveys have been conducted for the various desert tortoise recovery units over the last decade (USFWS 2006, USFWS 2009a, USFWS 2010a, USFWS 2010b). Of the six recovery units (Northeast Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, Western Mojave, and Upper Virgin River), only the Upper Virgin River Recovery Unit is completely outside of California. BRRTP would be located within the Western Mojave Recovery Unit. During surveys conducted within the recovery units, the Western Mojave Recovery Unit was determined to have the third lowest average density of desert tortoises, at 5.24 per square kilometer, but also the largest average density of the three "Mojave" recovery units, as shown in the table below. The BRRTP would not be located within any Desert Wildlife Management Areas or in the Desert Tortoise Natural Area.

TABLE 5-9. ESTIMATED DESERT TORTOISE DENSITY ($/\text{KM}^2$) IN CALIFORNIA RECOVERY UNITS (2001 – 2010)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Northeast Mojave	2.32	0.84	3.01	1.42	2.15	-	1.7	-	3.4	3.2	2.26
Eastern Mojave	3.00	4.11	2.76	5.57	5.54	-	5.8	6.4	5.1	3.6	4.65
Eastern Colorado	10.80	8.28	4.00	5.38	6.38	-	5.0	5.1	-	5.8	6.34
Northern Colorado	7.95	-	6.55	7.04	7.86	-	4.6	5.8	9.2	4.4	6.68

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Western Mojave	7.58	7.10	5.65	5.31	5.95	-	4.7	3.4	4.3	3.2	5.24

Numbers taken from USFWS range-wide desert tortoise monitoring annual reports (USFWS 2006, USFWS 2009a, USFWS 2010a, USFWS 2010b)

The intensity of the cumulative effect is increased due to the fact that these projects would be ongoing for several years. Concerning the desert tortoise, the accelerated loss of habitat—combined with the increased potential for losses of fossorial or slow-moving species, such as the desert tortoise—would represent the most significant cumulative impact from the BRRTP and other nearby developments. The Proposed Action, in conjunction with other projects, would diminish habitat availability and quality, and potentially result in the “taking” of these species. Because this species can take up to 20 years to reach sexual maturity and has low reproductive rates (USFWS 2008), any actions that stress, harm, or kill desert tortoises can be considered significant impacts under CEQA.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss). Cumulative effects on desert tortoise between BRRTP and past, present, and foreseeable projects in its vicinity would be significant under CEQA on all the Alternatives.

Non-listed Special-status Terrestrial Species – Numerous special-status terrestrial species that are not listed by the USFWS may occur within the southern, ANF portion and the northern, Antelope Valley and Mojave Desert portion of BRRTP. These include species listed as “sensitive” by the USFS and BLM and those listed as “species of special concern” by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR. Based on known records and surveys, some of these species are expected to be more prevalent than others. Many of these animals have overlapping habitat preferences or distributions, and many would be affected by project activities, most notably habitat loss or degradation that would occur from construction and maintenance of access roads and tower sites.

For the most part, many of the surrounding projects would have similar effects to the same species. The ATP and TRTP run close to BRRTP and would exert cumulative effects on many species due to proximity, resulting in habitat loss in ANF and/or in the Antelope Valley and Mojave Desert, depending on species. The construction of the ATP would have a short-term impact on biological resources. Individual animals may be injured or killed as a result of these projects, resulting in a cumulative reduction in local or regional populations. Long-term impacts from this project would include ongoing maintenance of the line that could potentially impact individual animals and continue the reduction of the population.

Other wind and solar energy projects—such as the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, and PdV Wind Energy Project—may be at a greater distance from BRRTP but may still exert cumulative effects with BRRTP due to large species ranges across the Antelope Valley and western Mojave Desert. However, many of these species have relatively small distribution ranges and negative effects in different locations from several different projects could still exert negative cumulative effects with BRRTP on local populations. The effects from these projects would be long-term when considered cumulatively, as they would be constructed over several years.

Fragmentation to terrestrial species from these projects would generally be minimal for transmission lines and greater for solar and wind facilities. Transmission lines would present very little impedance to movement because the towers would be open underneath. Some habitat would be removed directly underneath the towers and linearly along the ROW where necessary for tower access, but would not restrict movement of animals under or through the transmission line corridors. Solar and wind farms would potentially remove large blocks of habitat from movement corridors, most likely restricting larger animals to going around the facilities but possibly still allowing small animals to move through them, depending on the use of exclusion fencing. Animals may be discouraged from crossing through construction areas during the period of construction due to the heightened human presence, but would be expected to resume normal activity following its completion.

General practices that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include AIR-2a (Implement fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-16 (Protect burrowing owl), BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox), and BIO-22 (Protect special-status herpetofauna). Cumulative effects on special-status terrestrial species that are not listed by the USFWS from BRRTP and past, present, and foreseeable projects in its vicinity would not be significant.

Aquatic Wildlife

Arroyo Toad (*Bufo californicus*) – The federal Endangered arroyo toad is only known to occur near the new 230 kV circuit corridor of BRRTP, although due to the presence of suitable habitat, it may occur elsewhere in Alternatives 1, 2, and 2a. There is a known breeding population of arroyo toads located in Castaic Creek north of the northern terminus of the new 230 kV circuit corridor, which ends at Castaic Power Plant. The power plant access road may serve as an access road for BRRTP, possibly resulting in mortality of individual arroyo toads that may be traveling along the road between the upland and the creek. Habitat loss is possible in Charlie Canyon, where there is a sandy streambed immediately south of ANF that is crossed numerous times by Charlie Canyon Road, which serves as an access road to the existing transmission lines.

In fall 2009, LADWP conducted a sediment removal project in Castaic Creek, which resulted in the removal of arroyo toad habitat that was part of proposed critical habitat (74 FR 52611 52664). One arroyo toad was identified during preconstruction surveys and relocated upstream; no other arroyo toads were identified during construction and it is unknown if the project resulted in any injuries to or mortalities of individuals. This sediment removal project has previously been conducted every few years, allowing opportunities for habitat to redevelop in the streambed due to deposited sediment from waterflow. Any individual injuries, mortalities, or loss or degradation of suitable arroyo toad habitat on the new 230 kV circuit corridor would exert a cumulative effect with the 2009 sediment removal, negatively affecting the local metapopulation in Castaic Creek. The Alternative 1 corridor contains only a small amount of suitable habitat, which may undergo removal and degradation when project vehicles and equipment drive through it.

On Alternatives 2 and 2a, suitable habitat for the arroyo toad is located in San Francisquito Creek and within side drainages that pass under or adjacent to the proposed alignment. This habitat may be minimally affected by construction but would likely be mostly affected by BRRTP. SCE's ATP, located east of Alternatives 2 and 2a in the ANF, recognized that arroyo toads, if present, may be affected by construction, resulting in mortality, disruption of foraging sites or breeding behavior, habitat loss or degradation, and increased predation (Aspen 2006). However, arroyo toads are not known to be present within the ATP area and were not located during project protocol surveys; the nearest sighting is a 1994 record at the confluence of San Francisquito Creek and the Santa Clara River. Minimal suitable habitat is present on the Green Valley Localized Alternative. This habitat was part of BRRTP's 2010 arroyo toad protocol surveys, and was in the project area for LADWP's fall 2009 repair of the Elizabeth Tunnel. This action had a minimal effect to the existing habitat that was present on-site, as it removed recently eroded sediment buildup from the tunnel's outflow and restored the outflow's elevation and flowpath to approximately what it had previously been. Loss of individuals or habitat within any of these areas would exert a cumulative effect with BRRTP on the local arroyo toad population by removing individuals or suitable habitat.

Arroyo toad impacts from the TRTP are expected to be much the same as those for BRRTP. However, several factors have affected the severity of any impacts to arroyo toad that may be caused by TRTP, including the designation of proposed critical habitat and the effects of the 2009 Station Fire. In the same ruling that proposed critical habitat near the new 230 kV circuit corridor, critical habitat was proposed within TRTP's Segments 6 and 11 (74 FR 52611 52664), elevating the severity of any project effects—such as habitat loss—in this area. Additionally, the Station Fire, which burned in the ANF between August and October of 2009, burned occupied arroyo toad habitat in the southern section of the ANF. It is believed that there was a high arroyo toad mortality rate as a result of the fire, leading to a potentially significant reduction in local population size and likely temporary negative breeding conditions due to increased sedimentation, stressed toads, and degraded habitat (USFS 2010c). Additional loss of individuals or habitat as a result of TRTP would create a significant cumulative effect with the Station Fire's effects, exerting a cumulative effect with BRRTP on the regional population of arroyo toads between the northern and southern sections of the ANF.

Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to toad movement. Habitat alteration would be expected to be minimal and only as necessary. Construction would be expected to occur outside of breeding season, when toad activity would be reduced, if they are present. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of the required action. Long-term changes to arroyo toad movement and habitat would be minimal.

Several projects have been located within five miles of the above areas of suitable arroyo toad habitat, but are estimated to have not had any effect on the species. LADWP's PP2 Tailings Removal Project was located in San Francisquito Canyon, but was not in appropriate arroyo toad habitat and was located 8.5 miles from the known population near the new 230 kV circuit corridor. USFS non-native vegetation removal in Bouquet Creek also did not occur in suitable arroyo toad habitat (USFS 2010a). Relocation and construction of the Texas Canyon Fire Station and Barracks in Bouquet Canyon may have affected marginal arroyo toad habitat, but because the fire station and barracks were relocated to an existing burned site, the area is considered to have been already disturbed and any impacts to undisturbed habitat, if any, were likely small.

General practices that would reduce short-term and long-term effects to arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on arroyo toad between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

California Red-legged Frog (*Rana draytonii*) – The federal Threatened California red-legged frog is known to occur near Alternatives 2 and 2a in San Francisquito Creek in what is known as the St. Francis Dam reach. Direct impacts to individual animals are unlikely due to the distance of the transmission line corridor from the known population and the steep terrain in between. However, suitable habitat was located directly under the proposed Alternatives 2 and 2a ROWs along City Highline Road. While there are no known individuals in these locations, these areas may undergo habitat loss or degradation due to construction activity, as some transmission line spur roads would pass directly through them.

Unauthorized road grading performed by LADWP on City Highline Road in 2009 resulted in both habitat loss and degradation where dirt was pushed into streambeds, but effects in areas of suitable habitat were relatively small. California red-legged frogs are not known to be present in the Project area outside of the St. Francis Dam reach. SCE's ATP passed near areas that had known populations of California red-legged frogs—San Francisquito Creek and Amargosa Creek—and through an area outside ANF encompassing five acres with suitable stockpond habitat (Aspen 2006). Therefore, culvert placement and construction of new access and spur roads for the ATP could have affected California red-legged frog individuals or their habitat. Loss of individuals and habitat around Alternatives 2 and 2a due to these projects would exert a cumulative effect with BRRTP on the local population of California red-legged frogs by reducing the population size or availability of suitable habitat.

A potential California red-legged frog tadpole was identified in San Francisquito Creek on the new 230 kV circuit corridor during BRRTP special-status amphibian surveys. However, this was an isolated find and due to the unsuitability of habitat in the area that this tadpole was found, it is possible that the tadpole washed downstream from the occupied habitat during a heavy rain event. No additional projects in the vicinity of this sighting affected or could affect this area.

A new population of California red-legged frog was discovered in Aliso Creek less than one mile downstream of a road crossing for TRTP's Segment 11; SCE would avoid this crossing during construction and use a different access road to avoid directly affecting this new population. However, it is recognized that TRTP could still cause indirect effects to this population, which is already stressed and enduring in temporary breeding pools constructed by USFS and the U.S. Geological Survey (USGS); the severity of these effects would be determined based on whether or not the Station Fire had burned the area surrounding the new population (USFS 2010c). However, SCE still estimates that cumulative effects to the new population would be minimal due to avoidance. Any effects from TRTP on California red-legged frog would exert a cumulative effect with BRRTP on the regional population of California red-legged frogs, but because the population in Aliso Creek is newly discovered, it is difficult to estimate how severe any effects would be on the local or regional scales. USFS non-native vegetation removal in Bouquet Creek likely exerted a positive effect on California red-legged frog habitat by removing noxious weeds from the creek, although this area is not known to contain a population of the species.

Several projects in the vicinity of BRRTP's Alternatives 2 and 2a had little or no effect on California red-legged frog. LADWP's PP2 Tailings Removal Project, located west of Alternatives 2 and 2a in San Francisquito Canyon, had little, if any, effect on California red-legged frog. The construction area was not near the occupied habitat, but project access was along Forest Road 5N27, which crosses San Francisquito Creek 1.5 miles upstream of the known population. Thus, with several transport vehicles crossing through the flowing creek twice a day, sediment was generated in the water. However, silt exclusion fences were placed at the crossing along with several wattles to minimize any effects to riparian species and remove sediment from the water before it flowed downstream. LADWP's Elizabeth Tunnel repair, located west of Alternatives 2 and 2a, did not affect any California red-legged frog habitat.

Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to frog movement during seasonal migrations. Habitat alteration would be expected to be minimal and only as necessary. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of the required action. Exclusion fences along stream crossings, such as those used for the PP2 Tailings Removal Project, may slightly reduce downstream water flow, but not to the extent that it would be expected to have an effect on red-legged frogs or their habitat. Because this species generally resides in permanent pools or deep, slow-flowing water, long-term changes to California red-legged frog movement and habitat would be minimal.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). There are no cumulative effects on California red-legged frog between BRRTP and past, present, and foreseeable projects in its vicinity.

Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) – The State and federal Endangered unarmored threespine stickleback has been observed in the last several years near Alternative 3 in Bouquet Creek. There was previously a population in San Francisquito Creek near Alternatives 2 and 2a, but it has been determined to have been extirpated after 2005 flooding (CDFG 2010). BRRTP impacts to unarmored threespine stickleback habitat in Bouquet Creek are expected to be minimal. Impacts along Alternative 3 would likely consist only of habitat degradation due to the deposition of soil into the creek through vehicular access through the streambed to access tower sites. If water is flowing in the creek in these areas at the time of construction, this could result in mortality if fish are not properly excluded from the crossing with a barrier.

The ATP, which runs roughly along Bouquet Creek, may have resulted in deposition of soils into Bouquet Creek depending on specific tower sites, the amount of material cleared, and the location of the creek in relation to Bouquet Canyon Road at that point. However, effects to unarmored threespine stickleback were not expected from this project due to avoidance of known occupied habitat unless work was required directly in the streambed for a culvert repair (Aspen 2006). In addition, sediment monitoring conducted in conjunction with ATP indicates that no measurable levels of sediment have been deposited into Bouquet Creek from this project outside of the anticipated range of sediment from this watershed. The USFS Bouquet Creek weed removal project likely improved habitat for the unarmored threespine stickleback in Bouquet Creek by removing noxious weed species from the targeted section of Bouquet Creek, which is known to be occupied by this species (USFS 2010a). Habitat in San Francisquito Creek was improved as well, but this species is no longer believed to be present in the creek following heavy flooding in 2005 (CDFG 2010). There is a proposal to raise and realign Bouquet Canyon Road within the same stretch of road as the weed removal project (ANF Wildlife Biologist

Nathan Sill, personal communication, 7/9/2010). This may affect the habitat or population of unarmored threespine stickleback present in this area, but no project details are currently known.

SCE's TRTP is not expected to have any direct or indirect effects on unarmored threespine stickleback due to its being six miles away from the nearest known occurrence and to the implementation of best management practices. LADWP's PP2 Tailings Removal Project did not have an effect on unarmored threespine stickleback due both to numerous barriers between the project site and San Francisquito Creek and to the extirpation of the population that previously inhabited the creek. LADWP's Elizabeth Tunnel repair project did not affect any habitat for this species.

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if fish are present, but this activity should still provide continuous water flow. It is not expected that construction activities would have long-term effects on fish movements.

General practices that would reduce short-term and long-term effects to unarmored threespine stickleback and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback and its habitat include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program). Cumulative effects on unarmored threespine stickleback between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

Non-listed Special-status Aquatic Species – Several special-status aquatic species that are not listed by the USFWS may occur within the BRRTP area, none of which are known to occur in its direct area of effect. These include species listed as "sensitive" by the USFS and BLM and those listed as "species of special concern" by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR, and Management Indicator Species (MIS) are discussed in the MIS Report. Impacts to riparian habitats would result in some habitat loss and degradation to the extent needed for work and would be mitigated during construction by utilizing erosion control devices—to be described in the Stormwater Pollution Prevention Plan—to minimize the amount of sediment and stormwater entering streambeds, requiring equipment to be washed before entering the Project area, restricting refueling to areas at least 500 feet outside of riparian habitat, requiring Project vehicles and equipment working within 100 feet of active streams to be inspected for fluid leaks daily, narrowing centerline width and minimizing tower pad clearances in riparian habitat to the minimum safe extent, and requiring presence of a biological monitor during construction activities. Direct injury or mortality to any of these species would be unlikely unless, in the case of the southwestern pond turtle (*Actinemys marmorata pallida*), individuals happen to be in hibernation in a construction area. This would be unlikely, but in the event that it does occur, it would not lead to the State or Federal listing of the species.

SCE's ATP was not expected to have any impacts on arroyo chub or Santa Ana speckled dace, but had the potential to disrupt southwestern pond turtles and two-striped garter snakes by crushing or disturbing individuals or removing or degrading nesting, breeding, or basking sites (Aspen 2006). However, in the TRTP project area, USGS expects that the Station Fire could have had a substantial effect on fish species both at the time of the fire and in the future due to increased sedimentation and debris, potentially leading to the extirpation of entire populations in the area (USFS 2010c). Effects from TRTP on fish populations are not expected to be increased very much, but the cumulative effects when combined with those of the Station Fire would be large. Expected effects on aquatic species from TRTP include mortality where access roads pass through flowing stream crossings, such as in the West Fork of the San Gabriel River, riparian habitat loss, and increased sedimentation from construction and vehicular crossings (Aspen 2009). However, the level of sedimentation expected from TRTP is expected to be minimal relative to expected sedimentation from the Station Fire (USFS 2010c). The USFS Bouquet and San Francisquito Creeks weed removal project improved riparian habitat within the project area by removing non-native weed species from the streambed (USFS 2010a).

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if aquatic species are present and tied to the water (such as fish), but this activity should still provide continuous water flow. Animals that can leave the water, such as anurans, turtles, or snakes, would be less restricted by a stream diversion. It is not expected that construction activities would have long-term effects on aquatic wildlife movements.

General practices that would reduce short-term and long-term effects to special-status aquatic species that are not listed by the USFWS include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aquatic species that are not listed by the USFWS and its habitat include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna). Cumulative effects on special-status aquatic species that are not listed by the USFWS between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant.

Aerial Wildlife

Swainson's Hawk (*Buteo swainsonii*) – The State Threatened Swainson's hawk has the potential to occur in the BRRTP area as part of its winter range or as part of a flyover on its way to South America. It was observed during surveys on Alternatives 2 and 2a in 2009 and could also occur throughout the BRRTP area within the Antelope Valley. It is unlikely that any direct injury or mortality would occur to this species as a result of BRRTP, as Swainson's hawk is not believed to be present in the area during its breeding season. However, habitat loss would occur as grassland and agricultural areas are bladed to construct access roads and tower sites. This may have an effect on foraging capabilities. New transmission towers would pose a risk of electrocution and collision if not properly designed and mitigated.

The only project in the vicinity of Alternatives 2 and 2a that would affect Swainson's hawk is SCE's ATP. This project was estimated to have 315 acres of suitable foraging habitat within the ANF that could be affected, but it was determined that due to foraging travel distances and overall regional habitat suitability, effects on habitat from project implementation would be limited (Aspen 2006). SCE also estimated that implementation of prescribed transmission tower designs as described by APLIC (2006) would prevent bird—including raptor—electrocutions and that bird collisions would not substantially increase from pre-project conditions (Aspen 2006). During construction, five active Swainson's hawk nests were detected in the vicinity of the new transmission line (Aspen 2009).

Several projects in the Antelope Valley and West Mojave Desert would be conducted within Swainson's hawk territory. SCE's TRTP identifies the presence of Swainson's hawk active nests within four miles of the project area in the Antelope Valley as discovered during construction of the ATP (Aspen 2009). The northern region of the project is expected to impact 33.7 acres of suitable foraging habitat for this species, 4.3 acres of which would experience permanent disturbance. New transmission towers would present permanent disturbances to birds, but are expected to have less than significant impacts for bird electrocutions and collisions due to the implementation of measures described by APLIC (2006) and the installation of swan wraps on NFS lands. Swainson's hawks have a high probability of occurring near the Alta-Oak Creek Mojave Project (Kern County 2009), and although the project would present a permanent disturbance to birds, facilities would be designed according to raptor-safety measures suggested by APLIC (2006). However, it was determined that the risk of collision with wind turbines to Swainson's hawk would still be significant and unavoidable (Kern County 2009).

Studies conducted at other generation facilities have determined that raptor use of nests and habitat remained approximately the same before and after facility construction (Kern County 2009). The PdV Wind Energy Project is not known to have any resident Swainson's hawks, but migrating hawks have been observed in the project area, and it is estimated that 65.6 acres of grassland in the project area would be permanently affected out of a total of 1,639 acres (Kern County 2007). Grassland is used by the Swainson's hawk as foraging habitat. The Pacific Wind Energy Project also expects Swainson's hawks to be present, but would adopt mitigation measures similar to Alta-Oak Creek Mojave Project, the Catalina Renewable Energy Project and the PdV Wind Energy Project (Kern County 2010a, Kern County 2011). The Antelope Valley Solar Project found that loss of habitat for the Swainson's hawk would be unavoidable and contribute to a cumulative impact (RRG 2011). In addition, the Pacific Wind Energy Project also noted that, despite proposed mitigation to reduce avian collisions, effects on Swainson's hawk would still be significant and unavoidable (Kern County 2010a), while the PdV Wind Energy Project identified that impacts to Swainson's hawk are potentially significant and unavoidable due to uncertainty regarding the level of incidences of injuries and mortalities at wind farms due to typical flight heights (Kern County 2007). Habitat loss and disturbance to foraging and breeding activity by these projects would exert a cumulative effect with BRRTP Alternative 1 on the regional population of Swainson's hawks, which appears to be mostly migrants in this area. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, and Rising Tree Wind Project may increase risks of injury or mortality to Swainson's hawks that are in the area.

Fragmentation of Swainson's hawk habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if hawks are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have a negative impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of hawks, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter hawks from being in a particular area. It is expected that Swainson's hawks, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices and mitigation measures to protect Swainson's hawk would be implemented during construction of the BRRTP. General practices that would reduce short-term or long-term effects to Swainson's hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson's hawk include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). These include avoidance measures to protect raptors during breeding season and monitoring their activities to ensure that construction activities do not disturb this species. Cumulative effects on Swainson's hawk between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. Based on the presence of multiple existing transmission lines and access roads along Alternatives 2, 2a, and 3 and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present, cumulative effects on Alternatives 2, 2a, and 3 are not expected to be significant.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) – The State Endangered, federal Candidate western yellow-billed cuckoo is not known to occur within the BRRTP area, although suitable habitat was identified on Alternatives 2 and 2a during 2008 and 2009 surveys. Of the areas identified, not all would be affected by BRRTP construction. Dry Canyon, for instance, would not be significantly affected by construction because construction in this area is planned for the ridge above the canyon, not for the canyon bottom where most of the habitat is located. Because this species prefers to nest in willow or cottonwood forests, it may be directly affected through habitat loss from vegetation clearing, habitat degradation from the spread of non-native species, and/or direct injury or mortality if present in an area that is to be removed. Preconstruction nesting surveys and presence of a biological monitor would ideally prevent injuries or mortalities should any birds or nests be present, but complete avoidance (e.g., timing of construction for a period outside of the breeding season and/or exclusion buffers around suitable or occupied habitat) would probably be more likely to reduce the potential for take of this species.

SCE's ATP estimated 10 acres of habitat suitable for riparian bird species within or adjacent to the ROW; however, none of this habitat was expected to be sufficient in quantity or quality to support any western yellow-billed cuckoos (Aspen 2006). SCE's TRTP estimates a cumulatively significant and unavoidable impact (under CEQA) to western yellow-billed cuckoos as a result of its implementation (Aspen 2009). While this species has not been documented within the TRTP project area on the ANF, some of its habitat was burned during 2009's Station Fire and any birds that may have been present in now-burned areas on the ANF could have moved into relatively undisturbed areas within the project area (USFS 2010c). Should these birds now be present within the project area, they could be affected by project construction. The Bouquet Canyon Stream Restoration and Habitat Improvement Project would likely improve habitat for this species by removing non-native plant species from the vicinity of Bouquet Creek. Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal of riparian habitat would be minimal. Individual western yellow-billed cuckoos, if present, may avoid construction areas during construction, but are expected to resume use again after construction is completed.

Several other projects in the area of Alternatives 2 and 2a exerted little to no effects on the western yellow-billed cuckoo. LADWP's PP2 Tailings Removal Project, while located upslope and one mile from suitable habitat within San Francisquito Canyon and one mile northwest of Dry Canyon, did not have any effect on western yellow-billed cuckoo or its habitat due to a lack of any suitable habitat within or near the project area. LADWP's Elizabeth Tunnel repair project did not occur within suitable habitat for this species.

General practices that would reduce short-term or long-term effects to western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western yellow-billed cuckoo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on western yellow-billed cuckoo between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) – The State and federal Endangered southwestern willow flycatcher is known to occur within Alternatives 2 and 2a of BRRTP, and other suitable habitat was identified on Alternatives 2 and 2a during 2008 and 2009 surveys. It has also been observed as a migrant species around Bouquet Canyon, but it is unknown whether any breeding populations are present (Aspen 2006). Willow flycatchers have been observed in San Francisquito Canyon in surveys by Tierra Madre Consultants and PCR Services Corporation, but these were not identifiable to subspecies (Tierra Madre Consultants 1999, PCR Services Corporation 2001). Destruction of riparian habitat is expected to be minimal and only as needed for construction of new access roads. Disturbance and displacement may occur to any individuals that are present and near construction, but direct injury or mortality would be unlikely unless breeding populations are in fact present. Indirect impacts may occur through the spread of non-native weed species, which would degrade the species' native habitat.

Ten acres of suitable riparian habitat is present within or adjacent to SCE's ATP. While southwestern willow flycatcher is not expected to be present in heavily accessed areas such as Bouquet Canyon Road, it may be present in isolated areas such as Haskell Canyon, and SCE implemented appropriate mitigation measures to minimize impacts to any potential birds as much as possible during construction (Aspen 2006). Southwestern willow flycatcher was determined to be likely to occur in TRTP Segments 5, 6, 7, 8, and 11 due to sightings of willow flycatchers of an undetermined subspecies (Aspen 2009). Additionally, TRTP is within the southwestern willow flycatcher's historical range and still contains suitable habitat to support it. Construction adjacent to riparian areas could disrupt breeding and possibly lead to nest abandonment and subsequent mortality, but SCE would implement mitigation measures to reduce potential effects to any individuals that may be present. Prior to the Station Fire, southwestern willow flycatchers were known to use the burned areas sparingly, but if they moved into the project area following the fire, then potential impacts to individuals and habitat from TRTP would be more severe (USFS 2010c). The USFS Bouquet and San Francisquito Creeks weed removal project would have benefited the species by improving the quality of its habitat within the project area through removal of non-native plants.

Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell's vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but are expected to resume use again following construction completion.

Several other projects in the area of Alternatives 2 and 2a exerted little to no effects on the southwestern willow flycatcher. LADWP's PP2 Tailings Removal Project, while located upslope and one mile from suitable habitat within San Francisquito Canyon and one mile northwest of Dry Canyon, did not have any effect on southwestern willow flycatcher or its habitat due to a lack of any suitable habitat within or near the project area. LADWP's Elizabeth

Tunnel repair project also did not occur within suitable habitat for this species. These projects did not result in any habitat fragmentation for this species.

General practices that would reduce short-term or long-term effects to southwestern willow flycatcher and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern willow flycatcher include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on southwestern willow flycatcher between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Peregrine Falcon (*Falco peregrinus*) – The State Endangered peregrine falcon is not known to occur in the BRRTP area, but has the potential to occur along several areas in the ANF due to habitat availability, although nesting habitat may be limited by a lack of cliff-type areas. Because its habitat is primarily located in riparian areas, there would likely only be a small amount of habitat loss from BRRTP, as riparian areas and water bodies would be impacted as minimally as possible.

The ATP also identified a potential for peregrine falcon to occur, although it also cited a lack of nesting habitat. Based on the alignment for the ATP transmission corridor, impacts to peregrine falcon habitat were likely negligible, as riparian habitat is scarce. Peregrine falcon was identified as present or possibly present on several segments of the TRTP, mainly as migrants. Construction in these areas may result in habitat loss depending on where the habitat is located in relation to construction plans. However, peregrine falcon has a very large yearlong range covering almost all of the California coast and about half of the eastern side of California, and a winter range covering most of California's interior (CDFG 2008), and therefore would likely be largely unaffected by the relatively small amounts of habitat that would be lost around these project areas. Construction of all three of these transmission projects may benefit peregrine falcon by providing roosting sites or nesting sites on the towers, but at the same time may increase the risk to the species—as with all raptors—of collision, which would require appropriate mitigation and tower designs.

While not detected during any surveys, the peregrine falcon could use the Alta-Oak Creek Mojave Project site for foraging, although roosting and nesting habitat is not present (Kern County 2009). If this is the case, this project could increase collision potential and also remove foraging habitat during construction. Collision with turbines would remain a significant and unavoidable long-term impact for the Alta-Oak Creek project area. The Pacific Wind Energy Project also contains suitable foraging habitat that could be removed or degraded by project implementation and would also increase collision potential, but peregrine falcons are not known to reside in this project area, either (Kern County 2010a). However, the Pacific Wind Energy Project also noted that, despite proposed mitigation to reduce avian collisions, effects on peregrine falcons, if they are present, would still be significant and unavoidable (Kern County 2010a),

A single peregrine falcon was observed migrating through the PdV Wind Energy Project site, and summer residents are also known to be located nearby (Kern County 2007). Foraging habitat and resting habitat are located on-site, but nesting and roosting habitat are not present. The PdV Wind Energy Project is not expected to increase collisions with its wind turbines, which would have a collision zone between 200 and 400 feet above the ground; in contrast, a study of flight behavior showed that peregrine falcons routinely fly above 400 feet and were never observed flying below this height during the study (Kern County 2007). However, any impacts to the species would still be regarded as significant due to its listing status. Loss of foraging habitat as a result of the PdV Wind Energy Project is expected to be 4% of the existing suitable habitat on-site. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, and Rising Tree Wind Project may increase risks of injury or mortality to peregrine falcons that are in the area.

Fragmentation of Peregrine falcon habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if falcons are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have an impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of falcons, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter falcons from being in a particular area. It is expected that peregrine falcons, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices that would reduce short-term or long-term effects to peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). Cumulative effects on peregrine falcon between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area.

However, cumulative effects on Alternatives 2, 2a, and 3 are expected to not be significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.

California Condor (*Gymnogyps californianus*) – The State and federal Endangered California condor is known to be present along Alternate 1 and the reconductoring corridor south of Haskell Canyon, and has been known to fly over Alternatives 2, 2a, and 3 at lesser frequency. Direct impacts to this species would include habitat loss and/or degradation from construction of access roads and tower sites, as well as a disruption of potential foraging habitat due to construction disturbance. Indirect impacts include injury or mortality resulting from the spread and subsequent ingestion by condors of microtrash, as well as from the increased risk of collision as a result of new transmission towers. Based on recorded observations of this species as supplied by the U.S. Fish and Wildlife Service (2009), California condors are not expected to be nesting in the project corridors and likely nest away from the proposed corridors. However, as the condor population continues to grow over time and as resources within its historic range become more limited, the probability of condors expanding outside of their current range is likely to increase.

Several projects are present in the general BRRTP area that may also have effects on this species. Both nearby transmission projects, the ATP and the TRTP, identify the possibility of California condors occurring within their respective project areas. Expected effects from both projects are largely the same as those from BRRTP, but with proper mitigation, are deemed to be at a level that is less than significant. Suitable habitat for this species is present within the three subareas of the Alta-Oak Creek Mojave Project, although the condor is expected to have a low potential to occur based on its actual known range, which does not include the Mojave Desert as anything other than a transient area (Kern County 2009). Effects to California condor as a result of the construction of the Alta-Oak Creek Mojave Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. With implementation of mitigation measures, the effects on California condors from the Alta-Oak Creek Mojave Project are expected to be less than significant.

Similarly, it was determined that California condors have a low potential to occur within the Pacific Wind Energy Project area due to it being outside condor's historical range. USFWS GPS data shows condor movement approximately three miles from the Pacific Wind Energy Project area; however, condors are currently not known to consistently utilize areas outside of their historic range and this area only represents marginal foraging habitat and no nesting habitat (Kern County 2010a). Additionally, a model developed by the Pacific Wind Energy Project proponent to determine "probability of use" by condors of areas within and adjacent to the project supports the conclusion that California condor has a low probability of occurring within the Pacific Wind Energy Project. Impacts to California condors as a result of construction of the Pacific Wind Energy Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. However, unlike the Alta-Oak Creek Mojave Project, impacts from the Pacific Wind Energy Project and Catalina Renewable Energy Project are considered significant and unavoidable even after mitigation

(Kern County 2011). Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, PdV Wind Energy Project, Ridge and Rising Tree Wind Project may increase risks of injury or mortality to California condors that may enter the project areas, but because these projects are outside of the historical range of the condor, the cumulative risk is low.

Some of the projects in the area did not analyze impacts to California condor or do not currently have environmental analysis documents available. The PdV Wind Energy Project determined that California condors would not occur within the project area and does not analyze any project effects to it (Kern County 2007). The Rosamond Solar Project also did not analyze California condor (Kern County 2010b). The AV Solar Ranch One Project determines that condors are unlikely to occur in the project area except for flyovers and did not analyze any impacts to them (Los Angeles County 2010). Environmental analysis documents for other energy projects in the BRRTP vicinity are not available. It can be assumed that projects in the vicinity of the aforementioned projects would have the same likelihood of occurrence of California condors. The planned unincorporated community of Centennial would be built immediately south of California condor critical habitat on Tejon Ranch, and would likely have an effect on condors in this area. However, a draft Environmental Impact Report is not yet available for this project. Forest management projects do not all have environmental analysis documents available, but are generally unlikely to appreciably affect California condors based on their relatively small scales.

Because this species utilizes very large areas for foraging, it is not expected that it would be affected by habitat fragmentation related to BRRTP or the other transmission line projects. Solar and wind farms would remove larger areas of habitat, but California condors are not expected to occur within these project areas due to their tendency to remain within their historic range and mostly avoid the Mojave Desert.

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. Cumulative effects on California condor between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. However, cumulative effects on Alternatives 2, 2a, and 3 are not expected to be significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.

Bald Eagle (*Haliaeetus leucocephalus*) – The State Endangered bald eagle has the potential to occur near BRRTP Alternative 1 and the new 230 kV circuit corridor, where there is a large, open body of water at Castaic Reservoir. Direct impacts to this species include habitat loss for construction of access roads and tower sites, as well as disruption from construction. Indirect impacts may include increased risk of electrocution and collision with transmission towers unless properly designed and mitigated. Overall impacts to bald eagle from BRRTP would be small due to the overall lack of suitable habitat in the Project area, the general lack of sightings on the ANF within the Project area (though it has been observed at Pyramid Lake by USFS personnel), and the degree of existing disturbance such as at the Castaic Lake State Recreation Area. No impacts from SCE's ATP were expected and this species was not described in detail in project documents (Aspen 2006). Long-term impacts from SCE's TRTP include increased risk of electrocution and collision as a result of new transmission lines; however, towers and lines for TRTP would be designed and constructed according to raptor-safety guidelines suggested by APLIC (2006).

Habitat fragmentation is expected to be minimal. Areas along the proposed BRRTP routes where suitable bald eagle foraging habitat occurs are far enough away from the proposed and existing transmission lines that any foraging would be unlikely to be negatively impacted. There is also a lack of suitable nesting habitat within and around the Project area. Some bald eagle foraging and nesting habitat is present near Segments 6, 7, and 11 of TRTP; however, bald eagles are not known to be present in these areas (Aspen 2009). Along TRTP Segment 8, where bald eagles are known to be present, there is no foraging or nesting habitat. Suitable habitat for the bald eagle was present in the vicinity of the ATP around Bouquet Reservoir, which is three miles east of BRRTP Alternative 2, but bald eagles are not expected to occur in this area or in the Angeles National Forest (Aspen 2006).

Numerous other projects are located near Alternative 1 and the new 230 kV circuit corridor, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, and USFS Bouquet and San Francisquito Creeks weed removal efforts. However, none of these projects is in an area of suitable habitat for the bald eagle. The Pacific Pipeline Storm Relocation would be in areas near to the proposed Alternative 1 centerline, but would not affect flight patterns or any available nesting habitat for the bald eagle.

Compliance with the Bald and Golden Eagle Protection Act is discussed in Chapter 6 of this Final EIS/EIR. General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle). Cumulative effects on the bald eagle between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Coastal California Gnatcatcher (*Polioptila californica californica*) – The federal threatened coastal California gnatcatcher is known to be present on the BRRTP's reconductoring corridor south of Haskell Canyon, and has a low potential to occur along Alternative 1. Direct impacts on the reconductoring corridor south of Haskell Canyon would consist of habitat loss as needed to reestablish access to transmission towers for reconductoring or to create pulling/tensioning sites or staging or storage areas. It is expected that one or two staging areas five acres in size would be located generally in the center of the Project or at either end of the transmission line route; however, locations of these areas have not yet been determined. No new towers would be built along this corridor. Human presence may also disrupt any individuals in the area, and if these individuals are nesting, this may cause them to abandon their nests, potentially resulting in mortality of the young. Indirect impacts may result from the spread of non-native weed species that may be tracked into the area by Project vehicles and equipment, as well as the deposition of dust onto vegetation that may occur, which can cause reductions in plant vigor.

LADWP's Castaic-Olive Tower 247-5 Stream Diversion in winter 2009/2010 resulted in the removal of coastal sage scrub from the banks of Grapevine Creek, but the species was not removed from the area and was observed foraging on-site by the biological monitor following construction. Three miles of the reconductoring corridor south of Haskell Canyon immediately north of this site would fall within designated critical habitat for this species. The ATP was identified to occur within suitable patches of coastal sage scrub habitat along 4.6 miles of the transmission line. Although coastal California gnatcatchers were not known to reside within this habitat, the potential remained for habitat loss and for disruption of nesting pairs should they be present during construction (Aspen 2006). Mitigation measures, including presence/absence surveys and construction timing restrictions, were enforced during construction of the ATP to minimize potential impacts to this species.

The TRTP deemed coastal California gnatcatcher to be unlikely to occur or absent in all project segments near BRRTP; however, Segments 7 and 8 of TRTP are known to have coastal California gnatcatcher present (Aspen 2009). Out of 869 acres of coastal sage scrub habitat mapped within the TRTP project area, 38 acres—four percent—are estimated to be affected by implementation of TRTP. Impacts to this species as a result of TRTP include disruption of breeding activity, habitat loss and degradation, and increased potential for collision with transmission lines. These effects would be mitigated through preconstruction surveys and use of exclusion buffers as necessary. Effects on coastal California gnatcatcher as a result of the construction of these projects would result in habitat loss and impacts to both local and regional populations.

Habitat fragmentation associated with the BRRTP, ATP, and TRTP is expected to be low due to the relatively minor movement impediments caused by transmission lines. Vegetation would generally be removed at tower sites and on access roads, but would not otherwise prevent movement between habitat patches. The largest area of suitable habitat for the coastal California gnatcatcher within the BRRTP area is located along the southern end of the reconductoring area, where the BRRTP would pass through 2.9 miles of designated critical habitat Unit 13 and where additional occupied patches of suitable habitat are located within the Cascades Golf Course. However, LADWP's existing transmission line transects this area and does not present a boundary to daily gnatcatcher movement. The reconductoring of the existing transmission line and the construction of a new line are not expected to present noticeably greater impediments to coastal California gnatcatcher movement, with the exception of the temporary disturbance associated with construction.

Suitable habitat for this species is located within the ATP project area, but this area is also subject to urbanization and ongoing development (Aspen 2006). Thus, while the new ATP transmission line may have minimal effects on habitat fragmentation, continual development may reduce existing habitat and/or present impediments to movement between patches of habitat. TRTP Segments 7 and 8 cross through designated critical habitat for this species, which is also expected to be present in these areas (Aspen 2009). While the transmission line would not present major barriers to movement since birds can fly through, under, or around the towers and transmission line, various residential development projects in the TRTP area are expected to continually fragment coastal California gnatcatcher habitat. Additional development and urbanization within the general BRRTP vicinity may continue to reduce and/or fragment suitable coastal California gnatcatcher habitat.

Several other projects occur near Alternative 1, the reconductoring corridor south of Haskell Canyon, and the new 230 kV circuit corridor, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, USFS Bouquet and San Francisquito Creeks non-native vegetation removal project, and various energy development projects located in the Mojave Desert and listed in Section 5.2.1. None of these project areas contains suitable habitat for this species and they would have no effect on the coastal California gnatcatcher.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat). Cumulative effects on coastal California gnatcatcher between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Least Bell's Vireo (*Vireo bellii pusillus*) – The State and federal Endangered least Bell's vireo is known to be present on BRRTP's Alternative 1 near Castaic Lake and Castaic Lagoon and may also occur on Alternatives 2 and 2a. Direct impacts to this species would be habitat loss and/or degradation as well as mortality or injury of any birds that are in the area during construction activities on access roads and tower sites. Construction noise and presence may also disrupt or displace birds, which may lead to mortality of young if the bird is nesting at the time. Project equipment and vehicles would have the potential to carry non-native weed seeds, which may be spread and would lead to habitat degradation.

Ten acres of suitable riparian habitat is present within or adjacent to SCE's ATP (Aspen 2006). Impacts expected to this species as a result of the ATP's construction included disturbance from construction and temporary and permanent habitat loss. SCE's TRTP expected least Bell's vireo to have a possibility of occurring along Segments 6 and 11, in the southern portion of the ANF, and to be present in nests along Segments 7 and 8 in the southeastern portion of the project (Aspen 2009). On these two latter segments, it is estimated that the proposed project would result in the loss of 0.5 acre of southern willow scrub on Segment 7 and one acre of southern sycamore alder riparian woodland on Segment 8, some of which may currently or in the future be occupied by least Bell's vireo. While no individuals are currently known to reside within the TRTP area outside of Segments 7 and 8, it is possible that following the Station Fire in 2009, any individuals that occupied areas that were burned by the fire could have moved into unburned areas within the project area (USFS 2010c). Possible effects on least Bell's vireo resulting from TRTP include disruption of nesting, loss of young due to nest abandonment, habitat loss and degradation, and increased collision potential with new transmission lines.

The USFS Bouquet and San Francisquito Creeks Weed Removal Project occurred within suitable habitat for the least Bell's vireo, although the species is not known to be present within the area (USFS 2010a). Because it consisted of removal of noxious weeds, there may have been a slight improvement in habitat suitability and quality. Impacts from these four projects would affect both the local and regional populations of least Bell's vireo and/or its habitat. Fragmentation of this species' habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell's vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but would be expected to resume use again following construction completion.

Several other projects occur near Alternatives 1, 2, 2a, and 3, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP's Castaic Power Plant Sediment Removal Project, LADWP's PP2 Tailings Removal Project, LADWP's Elizabeth Tunnel repair project, and various energy development projects located in the Mojave Desert and listed in Section 5.2.1. None of these project areas contains suitable habitat for this species and they would have no effect on the least Bell's vireo or its habitat.

General practices that would reduce short-term or long-term effects to least Bell's vireo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell's vireo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and their habitat). Cumulative effects on least Bell's vireo between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Non-listed Special-status and Migratory Aerial Species – Several special-status aerial species that are not listed by the USFWS may occur in the BRRTP area, some of which are known to be present based on project surveys. These include species listed as "sensitive" by the USFS and BLM and those listed as "species of special concern" by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR, and MIS species are discussed in the MIS Report. In addition to these special-status species, the Project area in general is used by a large variety of migratory birds that are protected by the Migratory Bird Treaty Act. Impacts to aerial species would include habitat loss and/or degradation and possible injury or mortality if they happen to be present in a designated work area, particularly during nesting season. Species such as the burrowing owl may be crushed by construction if present in undetected burrows. Construction activity may result in dust deposition on vegetation, which would cause habitat degradation through loss of plant vigor. Individuals would likely be displaced or disturbed by construction noise and human presence.

Several transmission line, wind, or solar energy projects occur near the BRRTP along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, AV Solar Ranch One, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, TRTP, ATP, and various parcels of land for which the BLM has applied to develop for wind or solar generation. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, and the ongoing Castaic Power Plant Sediment Removal.

In addition to removing habitat where applicable, wind generation projects would result in increased obstacles to birds' flight patterns, potentially resulting in mortalities. Solar generation projects may remove foraging habitat in applicable areas by effectively blanketing large plots of land with solar panels. Transmission lines would increase electrocution and collision risks while also providing new perching or nesting opportunities for raptors. Development projects such as the unincorporated community of Centennial may remove habitat for birds such as the burrowing owl and the loggerhead shrike. Ongoing maintenance operations at Castaic Power Plant consisting of sediment removal from Castaic Creek would remove freshwater marsh habitat if this habitat continues to grow in the future following the most recent operation in fall 2009. Cumulative effects from these projects may result in the loss or degradation of habitat and reduced size of local or regional populations depending on species and project locations.

All of these actions may result in varying degrees of habitat fragmentation for different aerial species, such as bats. Transmission line projects would remove vegetation at tower sites and along ROW access roads, but would not present impediments to bird movement and migration, although they may result in increased collision and/or electrocution risk. Solar and wind development projects would remove large blocks of suitable habitat and may restrict birds from foraging in these areas due to the flight danger (such as from wind projects). Areas of urbanization would also remove habitat and may not have the same risks to bird safety, but would instead have increased human presence, possibly discouraging or reducing bird use of these areas. Depending on the amount of suitable habitat in and around these various projects, there may be varying degrees of habitat fragmentation as a result of their implementation.

The Antelope Valley Important Bird Area is located just north of the California Aqueduct in the Antelope Valley and extends across both sides of State Route 14. West of the highway, it runs along the Tehachapi Mountains to approximately nine miles southwest of the City of Mojave; east of the highway it abuts the southwestern edges of Edwards Air Force Base. This area is important for the conservation of many aerial species, particularly migratory birds that use it as a winter stopover or as spring breeding grounds (NAS 2012). The addition of the BRRTP is unlikely to cause notable effects to avian species in this area outside of the construction phase due to the presence of existing transmission lines along Alternatives 2, 2a, and 3, as well as the reconductoring corridor (Alternative 1, however, does not have an existing transmission line corridor through the Antelope Valley). However, the addition of the numerous other wind, solar, and transmission projects mentioned above may have larger, and potentially cumulative, effects on this area. As discussed above, both wind and solar farms would result in large blocks of habitat removal, while wind farms and transmission lines could result in increased potential for collision or electrocution of aerial species. The continued development of this area could also result in increasing habitat fragmentation such that aerial species would have patchier areas of habitat than were previously present.

General practices that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), BIO-17 (Protect the bald eagle and golden eagle), and BIO-19 (Protect California spotted owl). Cumulative effects on non-listed special-status and migratory aerial species between BRRTP and past, present, and foreseeable projects in its vicinity would be significant for some species, such as golden eagle and burrowing owl, if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. However, cumulative effects on Alternatives 2, 2a, and 3 are expected to not be significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.

Earth Resources

Introduction

This section addresses potential cumulative impacts to earth resources that would occur as a result of implementation of the proposed BRRTP. Cumulative impacts result from incremental impacts of the Proposed Action or its Alternatives when added to other past, present and reasonably foreseeable future actions within the designated region of influence. The earth resources cumulative analysis is divided into three sections based on distinct resource types: Geology, Seismicity and Soils; Mineral Resources; and Paleontology.

Geology, Seismicity and Soils

Impact Area and Impacting Factors

Cumulative impacts for geologic resources in the Project impact area apply to highly erosion-sensitive soils and distinctive geologic features that may be impacted by the BRRTP. Impacting factors that may affect highly erosion-sensitive soils and highly distinctive geologic features could occur during grading and construction of components of the proposed BRRTP. Erosion of highly sensitive soils could also occur during long-term operation of the BRRTP.

Cumulative impacts related to the major geologic and seismic hazards that may affect the Project apply to surface fault rupture, seismic ground shaking, liquefaction, landslides, soil erosion, settlement, expansive soils, corrosive soils and groundwater. The impacting factors related to potential geologic and seismic hazards occur due to conditions that may affect the proposed Project from the natural geologic environment.

The geographic areas for considering cumulative impacts related to geologic resources and potential geologic and seismic hazards are the proposed Project study corridors, including the expanded Barren Ridge and proposed new Haskell Canyon switching station locations. This is because geologic conditions and potential resources occur at site-specific locales, and are generally not affected by activities occurring outside the corridors.

Present and Reasonable Foreseeable Actions

The cumulative impacts analysis utilized a list of present and reasonably foreseeable projects within one-half mile radius of each Alternative. The projects were reviewed to evaluate potential geologic impacts that could occur where they cross or closely parallel the BRRTP study corridors. The Cumulative Projects List, Section 5.2 (Figure 5-1) describes the major cumulative projects in the BRRTP area. Any proposed or future project that would potentially disturb or diminish the function of soils or distinctive geologic features within this impact area may contribute to a cumulative effect.

Cumulative Effects Analysis

Past and ongoing development within the proposed BRRTP area has resulted in alterations to the natural geologic conditions. Past, existing and future projects could contribute cumulative impacts to the geologic resources within the impact area by creating erosion of highly sensitive soils and alteration of distinctive geologic features. These potential impacts to geologic resources would be limited to areas within and adjacent to the boundaries of individual projects, and such impacts would have to occur in similar locations within the boundaries of the proposed

BRRTP. However, construction of the proposed BRRTP would preclude other projects from being implemented concurrently in the same location. Therefore, proposed Project impacts related to highly erosion-sensitive soils and highly distinctive geologic features would not have the potential to combine with similar impacts from other projects, and would not have cumulative impacts.

The major geologic and seismic impacts that may affect the proposed BRRTP (surface fault rupture, seismic ground shaking, liquefaction, landslides, settlement, expansive soils, corrosive soils and groundwater) are related to outside effects from the natural environment that may impact the Project, and are not related to impacts from other past, present or future projects in the impact area. The effects of soil erosion that may impact the Project components are due to the nature of the earth materials, steepness of the terrain and other natural factors that are not related to other projects. Potential settlement, expansive soils and corrosive soils are also related to the inherent natural properties of soils underlying the Project components, and would not be due to effects from other projects. Therefore, the impacts to the BRRTP related to potential geologic and seismic hazards are not considered to be cumulative, since they are not caused by other past, present or future projects within the impact area.

Mineral Resources

Impact Area

The cumulative impacts analysis, as it relates to mineral resources affected by other past or reasonably foreseeable future actions, is located within a geographic area of one-half mile of the Alternative corridors. This is consistent with the special parameters set for the land use impact area that was used to inventory mineral resources.

Present and Reasonable Foreseeable Actions

Any existing or foreseeable future project or activity that would preclude the use, or disturb or diminish the function, of mineral resources within one-half mile of the Alternative corridors would contribute to the cumulative condition of the impact area.

Cumulative Effects Analysis

Although known sand and gravel resources, limestone and dolomite, and stone quarries are located within the general impact area, Project facilities would not be located within an active production area, and no unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by any of the Alternative corridors. Therefore, this Project would not contribute to cumulative impacts to mineral resources in the region.

Paleontology

Impact Area

The geographic areas for considering cumulative impacts related to paleontological resources are the proposed Project study corridors, including the expanded Barren Ridge and proposed new Haskell Canyon switching station locations. This is because potential resources occur at site-specific locales, and are generally not affected by activities occurring outside the corridors.

Present and Reasonable Foreseeable Actions

Table 5-10 briefly summarizes the ranges of factors within different types of projects that could affect paleontological resources.

TABLE 5-10. POTENTIAL SOURCES OF IMPACTS TO PALEONTOLOGICAL RESOURCES CAUSED BY DIFFERENT TYPES OF PROJECTS

Project Type	Potential Ground Disturbance Impacts
Transmission Projects	Access roads, vegetation clearance, structure placement
Generation Projects (Wind and Solar)	Access roads, vegetation clearance, turbine tower/panel foundations
Transportation and Public Facilities	Installation of pipeline, excavation for water bank
Recreation and Community Development	Excavation, clearing and grading
Local Projects	Excavation, construction of access roads, grading, clearing, etc.

Cumulative Effects Analysis

A review of the major pending projects reveals that few directly overlap with the various proposed BRRTP Alternatives. Further, when considering only those portions of the BRRTP Alternatives where moderate and/or high initial impacts to paleontological resources of major or maximum sensitivity are likely, it appears that only Alternative 1 has the potential for significant cumulative effects. In addition, although the potential to encounter paleontological resources along portions of all action Alternatives is considered high, standard conditions for monitoring and fossil recovery pertaining to paleontological resources that may be unearthed during construction of any ongoing or future projects in the area would minimize potential cumulative impacts to a level that is considered less than significant.

Water Resources

Impact Area

The Alternative routes are located within two watersheds, the Antelope-Fremont Valleys watershed and the Santa Clara River watershed. Since the BRRTP and other projects in the region have potential to affect the entire watershed, as opposed to affecting only a smaller geographic area or subwatershed, these two watersheds define the impact area for this cumulative effects analysis.

Direct and Indirect Impacts Summary

Construction and operation of the BRRTP Alternatives would potentially impact water quality of numerous named and unnamed streams within subwatersheds crossed by the BRRTP through ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Potentially affected streams include Pine Tree Canyon Creek, which drains from the Tehachapi Mountains; also Portal Canyon Creek, San Francisquito Canyon Creek, Bee Canyon Creek, and other streams, named and unnamed, that drain from the mountains within the ANF and have associated Riparian Conservation Areas, sensitive wildlife species, or both.

Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Additionally, fuel, oil, and other fluids used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Project-related ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation or increase of the rate or amount of surface water runoff. Grading activities could also potentially create additional sources of runoff, including polluted runoff.

Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Construction of the Project could also result in adversely impacting wetlands by removing or degrading wetland soils, damaging or removing wetland plants, or disrupting wetland hydrology. The Project would also result in placement of structures within a 100-year floodplain.

Many of the present and reasonably foreseeable projects described above involve grading activities, including large-scale grading activities that would continue for years after the BRRTP is completed. These projects would have potential to affect the impact area by altering drainage patterns, accelerating erosion, and adding additional sediment to local drainages.

Compacted or new paved areas, including railroad beds, would potentially increase the rate or amount of stormwater runoff, or create additional sources of stormwater runoff. Polluted runoff could be introduced to the impact area as oil products, collect on new paved surfaces, and are washed into the system with stormwater runoff. Projects using improper dewatering procedures could release contaminated groundwater into drainages within the impact area.

Along the foothills and drainages of the Tehachapi Mountains and the San Andreas Rift Zone are Palustrine Emergent (PEM) and Palustrine Forested (PFO) wetlands that could be filled by at least one project, and could be impacted by altered soils, vegetation, or hydrology resulting from other projects.

Most of the projects described above cross or are located within FEMA 100-year floodplains, and would place structures within a 100-year floodplain, potentially impeding or redirecting flood flows.

Cumulative Effects Evaluation

Whenever multiple activities at a single site, or activities at multiple sites, produce similar or complementary changes to environmental parameters or watershed processes, the resulting impacts can be cumulatively significant, even if they are individually insignificant. For example, soil compaction resulting from construction vehicles driving over a natural surface decreases pore space and collapses conduits between pores, reducing soil porosity and permeability, and increasing runoff rates, which causes erosion. Likewise, replacement of natural surfaces with impermeable material allows a high stormwater runoff ratio and increases both peak flows and total flow volume. Removal of topsoil, which leaves mineral soil exposed, also increases the rate of stormwater flow, which in turn creates more erosion (Reid 1993). Increased and eroding stormwater flows carry increased sediment load into drainages, which increases turbidity. When these processes are occurring at multiple sites, sediment load can increase turbidity such that water temperature can increase, which in turn decreases the level of dissolved oxygen, which can lead to increased stress or death of aquatic animals.

Polluted stormwater runoff could introduce petroleum products or pathogens, or otherwise alter water chemistry, including pH levels. Runoff from multiple sources could lead to water quality impacts that exceed water quality objective thresholds. In addition, some introduced chemicals can alter the mobility or chemical composition of chemicals already present, and may contribute to nutrient deficiencies or inhibit the ability of plants to make use of available nutrients. Introduced chemicals may be deposited within streams, and repeated addition of chemicals may cause a cumulative increase in concentration (Reid 1993).

When topography is altered for construction purposes, the change in natural contours can change local and downstream hydrology. Altered hydrology can decrease water availability to wetlands, which would impact wetland plant populations and eventually create upland conditions. Altered hydrology can also modify the timing and amount of storm runoff, which could change base flows, peak flows, and flood seasonality. In response to these changes, flood frequencies could change, stream channels could be aggraded, incised, or widened, and the size distribution of streambed sediment would be modified (Reid 1993). These effects would not be limited to the physical environment, but would also affect wetland and riparian plant populations and aquatic animal populations. Changes in flood frequency and distribution could also affect human populations.

Impacts that are individually less than significant are cumulatively significant if they contribute incrementally to a cumulative impact that is already significant. For example, if a project results in sedimentation impacts that are less than significant on a project-level basis, the cumulative impact from sedimentation can be significant if the sediment is released into a stream that has not yet recovered from previous sedimentation impacts. Potential impacts to water resources resulting from construction and operation of the BRRTP would be less than significant. Even with implementation of mitigation measures and GPs, however, they would have a cumulative effect on the watersheds in which they occur as they add to the impacts of past and contemporary projects, and as the impacts of future projects are added to them. While Project-level mitigation measures and GPs are not sufficient to negate cumulative watershed effects, effectively implemented they are an important component of a broader watershed-scale approach to recovery from human activities.

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CHAPTER 6: OTHER REQUIRED NEPA AND CEQA CONSIDERATIONS

6.1 INTRODUCTION

Chapter 6 includes additional topics not discussed elsewhere in this document that are required for consideration under NEPA and/or CEQA. Section 6.2 discussed adverse environmental effects that cannot be avoided. Section 6.3 discusses the relationship between the short-term use and long-term productivity of the environment as related to environmental sustainability. Section 6.4 discusses the potential for the irreversible and irretrievable commitment of resources by the Proposed Action or Alternatives. Section 6.5 discusses the potential for the Proposed Action or Alternatives to foster growth-inducing impacts to the surrounding environment. Section 6.6 discusses compliance with applicable federal environmental regulations and policies. Section 6.7 discusses energy conservation and potential energy impacts of the Proposed Action or Alternatives.

6.2 ENVIRONMENTAL CONSEQUENCES

CEQ NEPA Regulations require that an EIS include a discussion of those adverse environmental effects that cannot be avoided through project redesign, the selection of environmentally superior alternatives, or mitigation measures (42 USC 4332(C)(ii) and 40 CFR 1502.16). A discussion of the Proposed Action and alternatives is included in Chapter 1 (Purpose and Need) and Chapter 2 (Alternatives Including the Proposed Action) of this Final EIS/EIR. Together these chapters detail the Project objectives, the need for the Project, the Proposed Action, and the identification and selection of potential feasible alternatives, and fully address the Project's specific design. The potential environmental effects of the Proposed Action or alternatives and mitigation measures to reduce or avoid these effects are described in detail in Chapter 4 (Environmental Impacts) and Chapter 5 (Cumulative Effects) of this Final EIS/EIR. Impacts identified as significant and unavoidable are those that cannot be reduced to less-than-significant levels through the application of feasible mitigation measures; these are considered adverse environmental effects that cannot be avoided. These adverse environmental effects that cannot be avoided are summarized in Table 6-1 below.

TABLE 6-1. ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Adverse Environmental Effects that Cannot be Avoided for All Action Alternatives
Agriculture - Cumulatively significant impacts to agricultural operations as a result of Project construction and operation
Air Quality and Climate Change - Maximum daily construction emissions would exceed regional significance thresholds in 2013 and 2014
Air Quality and Climate Change - Emissions of NO_x would be above the *de minimis* threshold in 2013 and/or 2014
Air Quality and Climate Change – Cumulative impacts to PM_{10} because emissions would contribute to regional significance thresholds being exceeded.
Biological Resources – Cumulative impacts on all Alternatives to slender mariposa lily; desert tortoise; and California gnatcatcher. Cumulative impacts on Alternative 1 only to Swainson's hawk; peregrine falcon; California condor; golden eagle; and burrowing owl.
Cultural Resources – Effects to a National Register of Historic Places- and California Register-listed historic resource (Old Ridge Route and its contributing elements) and Olive Power Plant 1 Transmission Line (eligible for listing on the National Register; listed on California Register)

Adverse Environmental Effects that Cannot be Avoided for All Action Alternatives
Recreation – Degradation of the Pacific Crest National Scenic Trail
Recreation – Indirectly increase unauthorized or unmanaged recreational uses that could contribute to the long-term loss or degradation of nearby recreational opportunities
Recreation – Construction impacts related to restricted access or disruption of activities within recreational areas
Transportation/Traffic – Construction activities would exceed Level of Service standard "D"
Visual Resources – Impact to the Pacific Crest National Scenic Trail outside and within Angeles National Forest
Visual Resources –Non-compatibility with USFS Scenic Integrity Objectives and reduced Scenic Integrity created as a result of the project
Visual Resources – Impacts on residences, travelers, and recreationists as a result of contrasts created by the project
Visual Resources – Cumulative impact as a result of an increase in the number of structures and structure prominence.
Water Resources – Cumulative impact on watersheds

6.3 RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR 1500 - 1508) require that an Environmental Impact Statement (EIS) discuss "the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, to the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). In this section, the short-term effects and uses of various components of the environment in the vicinity of the Proposed Action or Alternatives are related to long-term effects and the maintenance and enhancement of long-term productivity. For analysis in this section, "short-term" is defined as the total duration of the associated construction activities of the Proposed Action or Alternatives, whereas "long-term" is defined as an indefinite period beyond the construction of the Proposed Action or Alternatives and associated facilities. The specific effects of the Proposed Action or Alternatives vary in type, intensity, and duration according to the activities occurring at any given time. The Proposed Action or Alternatives involve tradeoffs between long-term productivity and short-term uses of the environment.

Construction of the Proposed Action or any of the action Alternatives would result in a number of temporary effects that would cease upon completion of the construction phase. As discussed in Chapter 4, temporary construction related effects would occur to air quality, noise, land use, agriculture, recreation, public services and utilities, hazardous waste and materials, traffic and transportation, visual resources, cultural resources, wildfire and fuels, social and economic conditions, biological resources, earth resources and water resources. These short-term impacts are analyzed in each issue area in Chapter 4. Such impacts could include temporary air emissions and noise from construction equipment operation, temporary disruptions to existing land uses including agricultural operations and recreational activities in the area from construction activities, temporary redirection of emergency services due to construction-related road or lane closures, the potential of an inadvertent release of unknown soil or groundwater contamination during Project excavation activities, increased traffic from construction vehicles, increased lighting and glare at construction sites, disturbance to previously recorded or newly discovered historic and prehistoric sites, increased risk of wildfire caused by sparks from construction equipment, increased demand for local housing due to in-migrating labor, impacts to wildlife from clearing and grading, creation of erosion during grading, and increased sediment in stormwater runoff from construction sites.

The transmission towers and associated facilities may exist for decades and longer. Many of the effects discussed in Chapter 4 are considered to be short-term (occurring only during construction activities). Over the operational lifetime of the Proposed Action or Alternatives, long-term adverse impacts associated with land use, agriculture, recreation, public services and utilities, hazardous waste and materials, visual resources, cultural resources, wildfire and fuels, electrical effects, biological resources, and water resources could occur. These long-term impacts are analyzed in each issue area in Chapter 4. Examples of long-term impacts would include permanent changes in land use and conversion of agricultural land, the permanent alteration of the recreational experience of users of the Pacific Crest Trail from the introduction of new transmission towers, increased demands on fire and emergency response from an increased risk of wildfire during operation, potential soil or groundwater contamination from an accidental spill during maintenance vehicle or equipment fueling and lubrication, creation of dominant deviations from the existing visual landscape character in areas where new transmission lines would be located, visual impacts to the Old Ridge Route, a historic site listed on the National Register of Historic Places (for Alternative 1 only), interference to aerial and ground wildfire suppression tactics due to the presence of new transmission lines and personnel in the vicinity, localized increases in electromagnetic fields caused by the transmission of electricity, the permanent loss of vegetation and habitat, and the alteration of flood flows through the placement of transmission towers within a one hundred year flood plain.

Long-term benefits would also be associated with the Proposed Action or action Alternatives. These benefits include allowing for the interconnection to renewable energy in the Tehachapi Mountains and Mojave Desert areas, increasing LADWP's system reliability and flexibility in the utilization of renewable energy sources, and enabling the delivery of new sources of renewable energy to the Los Angeles basin.

For the purposes of BLM, the long-term productivity of the land under management of BLM that would be utilized by the Project would primarily be as a transmission pathway, as the Proposed Action or action Alternatives would be entirely within a federally designated utility corridor on BLM-managed lands. This long term productivity of the land would be balanced by the requested short-term uses of the land for the construction, operation, maintenance and decommissioning of the BRRTP. The proposed short term uses also would include the benefits of allowing for the interconnection to renewable energy in the Tehachapi Mountains and Mojave Desert areas, increasing LADWP's system reliability and flexibility in the utilization of renewable energy sources, enabling the delivery of new sources of renewable energy to the Los Angeles basin, and reducing environmental impacts associated with greenhouse gas emissions. The proposed short term use of the land for a transmission project would support and not conflict with the long term productivity of the land as a transmission pathway on BLM-managed lands.

6.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Pursuant to Section 15126.2(c) of the CEQA Guidelines, an EIR must address significant irreversible environmental changes that would be caused by the Proposed Action or Alternatives. These changes include uses of nonrenewable resources during construction and operation, long-term or permanent access to previously inaccessible areas, and irreversible damages that may result from Project-related accidents. CEQ regulations at 40 CFR 1502.16 require the NEPA environmental document to include a discussion of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented."

Resources committed to the Proposed Action or Alternatives would be material and nonmaterial, including financial. Irreversible commitment of resources or environmental changes, for the purpose of this section, has been defined as resources or changes that, once committed to the Proposed Action or action Alternatives, would continue to be committed throughout the life of the Project (CEQA Guidelines 15126.2(c)). Irretrievable commitment of resources has been defined as those resources used, consumed, destroyed, or degraded during the construction, operation, maintenance, and decommissioning of the Proposed Action or Alternatives that could not be retrieved or replaced for the life of the Project or beyond. Irreversible and irretrievable commitments of resources and environmental changes for the Proposed Action or action Alternatives are summarized below in Table 6-2.

TABLE 6-2. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS

Resource Type	Type of Commitment/Change *Reason for Commitment/Change*	Irreversible	Irretrievable
Climate and Air Quality	Degradation of air quality. *Construction activities.*	No	No
Noise	None.	-	-
Land Use	Exclusion of other uses. *Construction and operation.*	No	Yes
Agriculture	Exclusion of other uses. *Construction and operation.*	No	Yes
Recreation	Impacts to recreational facilities and trails. *Construction and operation.*	No	Yes
Public Services/Utilities	None.	-	-
Hazardous Waste/Materials	None.	-	-
Traffic and Transportation	Use of local transportation infrastructure. *Construction and operations.*	No	No
Visual Resources	Adverse affects to visual resources of the area. *Construction and operation.*	No	Yes
Cultural Resources	Disturbance or removal of historical, cultural and/or archaeological resources *Construction and operation.*	Yes	Yes
Wildfire and Fuels	Impacts to fire suppression efforts. *Construction and operation.*	No	Yes
Electrical Effects	None.	-	-
Social and Economic Conditions	None.	-	-

Resource Type	Type of Commitment/Change *Reason for Commitment/Change*	Irreversible	Irretrievable
Biological Resources	Disturbance to and loss of vegetation and wildlife. Degradation and loss of habitat. *Construction and operation.*	Yes	Yes
Earth Resources: Soils	Soil loss and erosion. *Construction activities.*	Yes	Yes
Earth Resources: Mineral Resources	Raw materials. *Construction activities.*	No	Yes
Earth Resources: Paleontology	Disturbance to or removal of fossils. *Construction activities.*	Yes	Yes
Water Resources	Impacts to drainages, wetlands, Waters of the State, Waters of the U.S., and intermittent and ephemeral streams. *Construction activities.*	No	No

6.5 GROWTH-INDUCING EFFECTS

Section 15126.2(d) of the CEQA Guidelines requires that an EIR discuss the ways in which a proposed project may foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. The CEQ NEPA Regulations also provide for discussing the growth-inducing impacts of an action. (40 CFR 1508.8(b) ["Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."]). The discussion must additionally address how a proposed project may remove obstacles to growth, or encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

6.5.1 GROWTH CAUSED BY PROJECT-RELATED EMPLOYMENT

The majority of Project-related employment is expected during Project construction activities. Construction of the Proposed Action is estimated to require approximately two years, 447 total workers, and 173 workers at the peak of construction. It is assumed that the construction of the Alternatives would employ a similar number of personnel because the Alternatives would be constructed under similar time constraints. The construction workforce would consist of 10% supervisory, 60% skilled labor, and 30% unskilled labor.

Due to the specialized nature of high-skill transmission line and switching station work, workers possessing these skills typically travel from other areas of the country, or even overseas, to work on projects. However, in the Los Angeles area, due to the sheer size of the employment base, it is likely that a small proportion of the required high-skill work force could be hired locally. Low-skilled workers were assumed to all be hired from the local area. Based on these assumptions, persons hired from outside the study area that would in-migrate from outside the region would comprise the bulk of the work force. This in-migrating work force would peak at 109 in late summer 2011 and at 102 in May 2012.

With baseline 2008 employment in Kern and Los Angeles Counties at about 330,000 and 4.5 million respectively, estimated increase in employment would be negligible in either county.

Even with the bulk of skilled workers expected to be hired from outside the Project area, due to the relatively small scale of the Proposed Action within the context of Kern and Los Angeles Counties, growth is not expected to be caused by Project-related employment.

6.5.2 DEVELOPMENT OF RENEWABLE RESOURCE GENERATION IN THE TEHACHAPI AND MOJAVE DESERT AREAS

The Mojave Desert has some of the highest solar insolation in the world, as well as highly economical solar resources. Nearby, the Tehachapi Mountains have excellent wind resources. Both areas are located within a short distance to the major metropolitan areas of Southern California, including the City of Los Angeles. Due to State and local mandates to increase the use of renewable energy in California, it is expected that renewable energy generation facilities would continue to be developed in these resource-rich areas. BRRTP would be considered growth accommodating rather than growth inducing, because it is expected that renewable energy generation development would occur in the Tehachapi Mountains and Mojave Desert areas regardless of the construction of BRRTP.

As described in Chapter 1, Purpose and Need, one of BRRTP's primary objectives is to allow interconnection to renewable energy in these areas. In the mountains northeast of the city of Tehachapi, LADWP has developed the Pine Tree Wind Project. Furthermore, LADWP currently has several requests for interconnection by private generation developers for 1,500 MW of new wind and 1,100 of MW of new solar generation. While these identified generation projects may or may not be constructed due to individual project permitting, licensing and funding, there is a high potential for future project development in these areas as described above. LADWP's current maximum transfer capacity on the existing BR-RIN 230 kV transmission line is 570 MW. The BRRTP would increase this transfer capacity to accommodate generation development of the area.

While the Proposed Action would provide a portion of the infrastructure necessary for the transmission of energy from existing and future known and unknown wind and solar generation facilities, it would also assist with meeting the goals and policies of local and regional land use plans. Kern County has identified a lack of adequate power transmission capacity as an obstacle to the development of wind energy within the County. The Kern County 2008 General Plan includes a policy to support the construction of transmission projects to access the County's generating resources, insofar as transmission lines do not create significant environmental or public health and safety hazards.

6.5.3 GROWTH RELATED TO THE PROVISION OF ADDITIONAL ELECTRIC POWER

As described in Chapter 1, Purpose and Need, LADWP has an annual electrical demand of 6,200 megawatts (MW). To maintain a reliable electrical system, it must obtain a system reserve requirement of 1,200 MW; therefore, LADWP must generate 7,400 MW per year. Despite the growing population in Los Angeles, LADWP predicts that electrical consumption within its service territory would have a minimal increase at an average rate of 0.9 percent per year, and the peak demand would increase at an average of 60 megawatts (MW) per year for the next 20 years (LADWP IRP 2007).

LADWP's current resource mix relies primarily on fossil fuels (39% from coal and 31% from natural gas-fired plants) to produce electricity for its customers (LADWP Power Content Label 2009). The primary sources of coal-energy are the Utah Intermountain Power Project and the Navajo Generating Station in Arizona. LADWP's natural gas plants are located throughout the Los Angeles Basin. Seven percent is generated from large hydroelectric power plants and 9% is generated from nuclear plants. Approximately 14% of the energy mix is generated from renewable resources (biomass and waste, geothermal, small hydroelectric, solar and wind).

The State of California has one of the most aggressive renewable energy programs in the country and has established a Renewable Portfolio Standard (RPS) policy requiring the increased production and use of renewable energy (such as wind, solar, small hydroelectric, biomass, and geothermal energy). As a component to its Power System Integrated Resource Plan, LADWP has also adopted an RPS policy that matches the State's RPS.

The Proposed Action is not viewed as either inducing or limiting urban growth in the LADWP service area. Electrical energy is just one of several factors that contribute to urban growth, including provision of water and wastewater supply and capacity, transportation capacity, growing economic base, housing supply, and growing employment. In addition, virtually all new growth and development are approved by local agencies through discretionary actions, including requests to build more homes, schools, and commercial, industrial, and infrastructure projects.

While new generation facilities may indirectly be facilitated by the Proposed Action, the increase in renewable generation capacity would be offset by the reduction of use in energy from non-renewable resources per the RPS. Growth in the Los Angeles area is not constrained by electrical supply, and the addition of the proposed transmission infrastructure is not expected to impact or foster the expected growth in the Project area.

6.6 COMPLIANCE WITH APPLICABLE FEDERAL ENVIRONMENTAL REGULATIONS AND POLICIES

6.6.1 NATIONAL ENVIRONMENTAL POLICY ACT

Section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321-4347), states that all agencies of the Federal Government shall include in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on: (i) the environmental impact of the proposed action; (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented; (iii) alternatives to the proposed action; (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

For the BRRTP, the Angeles National Forest and BLM are the co-lead federal agencies for NEPA compliance. This Final EIS/EIR has been prepared in accordance with the requirements and guidelines as set forth in: (1) Section 102 of NEPA; (2) the Council on Environmental Quality Regulations on Implementing National Environmental Policy Act Procedures (40 CFR 1500 - 1508);(3) the U.S. Department of Agriculture Procedures for Implementing the National Environmental Policy Act (7 CFR 1b); and the BLM NEPA Handbook (H-1790-1). BLM issued this handbook to provide instructions for complying with the CEQ NEPA regulations.

6.6.2 ENDANGERED SPECIES ACT

The Endangered Species Act (ESA) of 1973, 16 USC 1531 et seq., includes provisions for protection and management of species that are federally listed as threatened or endangered or proposed for such listing, and of designated critical habitat for these species. The administering agency for the above authority for non-marine species is the U.S. Fish and Wildlife Service (USFWS). Regulations are found at 50 CFR 402.

In compliance with the requirements of the ESA, the federal Lead Agencies consult with the USFWS regarding the effects of an Action on listed species. As part of consultation with USFWS, the Lead Agencies would prepare and submit a Biological Assessment (BA) to evaluate the potential effects of an action on federally listed and proposed species and determine whether any such species is likely to be adversely affected by an Action. Subsequently, any "take" of a federally listed species as a result of implementation of an Action would only be allowed in the context of a Biological Opinion (BO) issued by USFWS.

6.6.3 NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA) of 1966 as amended, 16 USC 470 et seq. provides for the listing of historic properties and sites in the National Register of Historic Places and provides for the protection of these properties and sites. Section 106 of the NHPA requires that federal agencies take into account the effect of a federal undertaking on properties listed on the National Register or potentially eligible for listing on the National Register, and consult with the state historic preservation officer (SHPO) regarding these properties or sites. The agencies must afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. A federal undertaking is a project that is federally funded, takes place on federal land, or requires a federal permit or license (36 CFR 800.16(y)).

Compliance with Section 106 is required whenever a project has a federal nexus, meaning that the project is on federal land, uses federal funds, or is permitted by a federal agency (36 CFR 800.16(y)). The USFS proposes to issue a 50-year term Special Use Authorization (SUA) for the BRRTP and to issue Temporary SUAs for related construction activities outside the ROW. The BLM is considering whether to issue a new right-of-way grant for the construction, operation, maintenance, and decommissioning of the 230 kV transmission line and whether to authorize the reconductoring of the existing Barren Ridge-Rinaldi transmission line and the new 230 kV circuit on existing double circuit structures under existing authorizations. The activities for both federal agencies constitute undertakings as defined in 36 CFR 800.16(y) and require compliance with Section 106 of the NHPA.

For the BRRTP, the Angeles National Forest is the lead federal agency for Section 106 compliance. The Angeles National Forest, BLM Ridgecrest Field Office, LADWP, and

California SHPO are preparing a Programmatic Agreement (PA) outlining procedures, tasks, standards, and responsibilities for complying with Section 106 during planning, construction, operation, maintenance, and decommissioning of the BRRTP. According to 36 CFR 800.14(b), a PA may be used when effects on historic properties cannot be fully determined prior to approval of an undertaking. See Appendix O of this Final EIS/EIR for the Programmatic Agreement (PA).

Additionally, the BLM and the USFS are committed to complying with Executive Order (E.O.) 13007. E.O. 13007, issued in 1996, directs federal agencies responsible for managing federal lands to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.

Neither the USFS nor the BLM have received any information from Tribes regarding sacred sites in the BRRTP area, nor have any Tribes raised concerns about specific sacred sites during the NEPA scoping and Section 106 consultation processes. Through the ongoing consultation process, the ANF will continue to solicit and consider Native American concerns in the BRRTP impact analysis process, in the selection of a route, during implementation of mitigation measures, and during construction. Avoidance is the preferred measure for preventing impacts to cultural resources. The PA prepared by the ANF and BLM describes the process for assessing adverse effects on cultural resources, treatment of human remains, and unanticipated discoveries.

6.6.4 CLEAN AIR ACT

The Clean Air Act (CAA), as revised in 1990 (42 USC 7401), requires the U.S. Environmental Protection Agency (EPA) and states to carry out programs intended to ensure attainment of National Ambient Air Quality Standards (NAAQS). The General Conformity Rule require that federal actions do not interfere with state programs to improve air quality in nonattainment areas.

The 1990 amendments to the federal CAA Section 176 require the EPA to promulgate rules to ensure that federal actions conform to the appropriate State Implementation Plan (SIP). These rules, known together as the General Conformity Rule (40 CFR 51.850-51.860 and 40 CFR 93.150-93.160), require any federal agency authorizing an action in a nonattainment or attainment/maintenance area to determine that the action conforms to the applicable SIP or that the action is exempt from the General Conformity Rule (40 CFR 51.853). This means that federally supported or funded activities would not (1) cause or contribute to any new federal air quality standard violation, (2) increase the frequency or severity of any existing federal standard violation, or (3) delay the timely attainment of any federal standard, interim emission reduction, or other milestone (40 CFR 51.853). Actions can be exempt from a conformity determination if an applicability analysis shows that the total direct and indirect emissions from construction and operation activities would be less than specified emission rate thresholds, known as *de minimis* limits, and that the emissions would be less than 10 percent of the area emission budget.

A comparison of the emissions of the Proposed Action to the General Conformity Rule *de minimis* thresholds is included in Chapter 4, Section 4.2.1, Air Quality and Climate Change. The estimated annual emissions during construction are expected to exceed the General Conformity Rule *de minimis* emission thresholds for NOx during some construction years; therefore, a comprehensive General Conformity analysis would be required prior to the issuance of a Record of Decision for the Proposed Action or action Alternatives (40 CFR 51.853).

6.6.5 CLEAN WATER ACT

The federal Clean Water Act (CWA) of 1977 (33 USC 1251-1376) is an amendment to the Federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. Several sections of this act pertain to regulating impacts to wetlands. The discharge of dredged or fill material into waters of the United States is subject to permitting under Section 404 (33 USC 1344). Section 401 specifies additional requirements for permit review, particularly at the state level. The CWA is administered by the EPA and U.S. Army Corps of Engineers (USACE).

CWA Section 401 gives individual states the authority to issue, waive, or deny certification that a proposed activity conforms with state water quality standards. Projects, including those that require permits from USACE under Section 404, are reviewed by the state's Regional Water Quality Control Boards (RWQCBs) or the State Water Resource Control Board if more than one region is affected.

USACE and EPA regulate the placement of fill and dredged materials into waters of the United States under CWA Section 404. Waters of the United States include lakes, rivers, streams, and their tributaries, as well as certain wetlands with a significant nexus to traditional navigable waters (33 CFR 328.3(a)(3)). Tributary waters subject to USACE jurisdiction extend to the ordinary high water mark on opposing channel banks. Wetlands are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(b)). Project proponents must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed action. USACE may either issue individual permits on a case-by-case basis or general permits at a program level. General permits are pre-authorized and are issued to cover similar activities expected to cause only minimal adverse environmental effects. Nationwide permits (NWPs) are a type of general permit issued to cover particular fill activities. NWPs have a set of conditions that must be met for the permits to apply to a particular project and specific conditions that apply to each NWP.

For the Proposed Action, National Pollutant Discharge Elimination System (NPDES) permits would be issued by the Lahontan and Los Angeles RWQCBs. In order to comply with NPDES regulations, a Stormwater Pollution Prevention Plan would be prepared for the construction activities.

A Section 404 permit would be required for construction activities involving excavation or replacement of fill material into waters of the United States. In addition, a Water Quality Certification pursuant to Section 401 of the CWA is required for Section 404 permit actions.

6.6.6 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 USC 703-711) includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by federal regulation (50 CFR 21). The administering agency for the above authority is the USFWS. The act provides at 16 USC 703 that "except as permitted by regulations . . ., it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill . . . any migratory bird.". The word "take" is defined at 50 CFR 10.12 to mean "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (including nests, eggs, and feathers).

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), 66 FR 3853, was issued on January 10, 2001, in furtherance of the purposes of the Migratory Bird Treaty Act (16 USC 703-711), the Bald and Golden Eagle Protection Acts (16 USC 668-668d), the Fish and Wildlife Coordination Act (16 USC 661-666c), the Endangered Species Act of 1973 (16 USC 1531-1544), the National Environmental Policy Act of 1969 (42 USC 4321-4347), and other pertinent statutes. In order to identify the potential effects of future federal projects on migratory birds, federal agencies are required to develop a Memorandum of Understanding with the USFWS that would promote migratory bird conservation.

The Proposed Action and action Alternatives would have the potential to impact nesting birds, which are protected under this Act; however, mitigation measures have been developed for the Project to reduce avian impacts to a level that is not significant.

6.6.7 BALD AND GOLDEN EAGLE PROTECTION ACT

Bald eagle protection began in 1940 with the passage of the Eagle Protection Act, which was later amended in 1962 to include golden eagle and was renamed the Bald and Golden Eagle Protection Act. This Act makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs (16 USC 668). "Take" includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing (16 USC 668c). Exceptions may be granted by USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans (16 USC 668a). However, no permits may be issued for import, export, or commercial activities involving eagles (16 USC 668).

The Proposed Action and action Alternatives would have the potential to impact eagles, which are protected under this Act. Mitigation measures, including the creation of an Avian Protection Plan, have been developed for the Project to reduce the effects on raptors and eagles to a level that is not significant.

6.6.8 PROTECTION OF WETLANDS

Executive Order 11990 (42 FR 26961, May 24, 1977) provides for the protection of jurisdictional wetlands. The administering agency for the above authority is USACE. If wetland impacts cannot be avoided, then all practicable measures to minimize harm to those wetlands must be included and documented in the final environmental document for the proposed project.

Both federal and State jurisdictional waters may be affected by construction of the Proposed Action or the action Alternatives, and wetlands have been documented within a half-mile of the Proposed Action and action Alternatives. Per mitigation measures developed for the Project, impacts to areas under jurisdiction of the USACE, RWQCB, USFS and the California Department of Fish and Game (CDFG) would be avoided to the extent feasible. Where avoidance of jurisdictional areas is not feasible (e.g., emergency repairs), LADWP would be required to complete the necessary wetland permitting and mitigation required as part of the permitting process by the creation/restoration/preservation of suitable jurisdictional habitat along with adequate buffers to protect the function and values of the jurisdictional area mitigation. The location(s) of the mitigation would be determined in consultation with BLM, Wildlife Agencies, USFS, USACE, RWQCB, and CDFG, as part of the wetland permitting process.

6.6.9 INVASIVE SPECIES

Executive Order 13112 (64 FR 6183, January 15, 1999) calls on Executive Branch agencies to work to prevent and control the introduction and spread of invasive species. Non-native flora and fauna can cause substantial change to ecosystems and upset the ecological balance, and have the potential to cause economic harm.

Implementation of the Proposed Action or action Alternatives would have the potential to impact the spread of invasive species into uninfested areas through construction activities; however, mitigation measures have been proposed to prevent the spread of invasive weeds during construction.

6.6.10 NATIONAL FOREST MANAGEMENT ACT

The National Forest Land Management Act (NFMA) is the primary statute governing the administration of national forests. The act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System.

The USFS recently revised the Southern California Land Management Plan (Land Management Plan) (USFS 2005), which includes four Southern California national forests: Los Padres, Angeles, San Bernardino, and Cleveland. The revised Land Management Plan reflects strategies for addressing issues identified by the public and USFS staff. The USFS is required (under 36 CFR 219.10) to review all site-specific projects, including authorized uses of land, to ensure they are consistent with the 2005 Forest Plan, per the NFMA (16 USC 1600-1614, as amended).

To ensure consistency with management direction in the governing Land Management Plan, the Proposed Action or Alternatives would require several amendments to the Land Management Plan. Any proposed Land Management Plan amendments pertaining to this action have been included as part of the need for action and included in the analysis of the Proposed Action and Alternatives in this document. The Land Management Plan amendments must be approved before Special Use Authorization(s) could be issued to LADWP for the Proposed Action or an Alternative.

6.6.11 WILD AND SCENIC RIVERS ACT

In accordance with the Wild and Scenic Rivers Act (16 USC 1271-1287), certain selected rivers in the United States are to be protected and preserved in free-flowing condition because of their "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values"(16 USC 1271). Every wild, scenic, or recreational river in a free-flowing condition, or upon restoration of this condition, is eligible for inclusion in the National Wild and Scenic Rivers System (16 USC 1273(b)). If the river is determined to be eligible, a suitability analysis is conducted for the river's current level of development, accounting for water resource projects, shoreline development, and accessibility. A recommendation is also made that the eligible river be placed in one or more of three classes: wild, scenic, and/or recreational. Prior to official designation, eligible rivers are afforded federal protection against activities or actions that could potentially interfere with the "outstandingly remarkable values" (ORVs) of the river that make it eligible for the recommended classifications within the National Wild and Scenic Rivers System.

After a river is determined to be eligible for the National Wild and Scenic Rivers System, all existing facilities, management actions, and approved uses may continue in the river corridor, provided they do not interfere with the protection of the river's ORVs or potential classification.

This Final EIS/EIR reviews the eligible San Francisquito Canyon as a Wild and Scenic River. If the Proposed Action or any approved Alternative would compromise the ORVs, potential classification, or free-flowing character of an eligible wild and scenic river segment, a suitability study would be completed for that eligible river segment prior to initiating activities (16 USC 1275).

6.6.12 ENVIRONMENTAL JUSTICE

Because the Proposed Action would require federal permits, it is subject to Environmental Justice analysis. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environmental and human conditions of minority populations. Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA 2011). Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) people's concerns would be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected (EPA 2011). The discussion of environmental impacts focuses on fair treatment.

The Council on Environmental Quality (1997) provides guidance to assist all federal agencies to address environmental justice in NEPA documents. Federal agencies must address disproportionately high and adverse human health; and environmental effects of their programs, policies and activities on low-income populations and minority populations. Because the Project would require Federal permits and funding, it is subject to an analysis for Environmental Justice.

Several elements from the Executive Order are essential to the analysis of environmental justice for significant impacts:

(1) The community composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes.

(2) Relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available and even if certain effects are not within the control or subject to the discretion of the agency or agencies proposing the actions.

(3) Interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency actions, including the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.

An identified human health or environmental effect that is disproportionately high and adverse on a low-income population, minority population, or Indian tribe does not preclude proposed federal actions from going forward. The effect does not necessarily compel a conclusion that a proposed action is environmentally unsatisfactory. Identification of such an effect, however, heightens agencies' attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population.

Data Sources

The data used for this analysis are derived from the 2000 census, as the 2010 census was only just becoming available at the time of drafting the Draft EIS/EIR. According to the Guidelines, a significant minority population exists if minorities comprise 50 percent or more of the affected areas general population. For this analysis, a racial minority is defined as any person counted by the Census as any race other than "White only."

Race and Ethnicity

In 2000, the total population living in Census Block Groups that were entirely or in part within six miles of any of the Project facility was 1,018,913. Persons of White race alone comprised 58.2% of the total. For comparison, Kern County residents of White race only were 61.4% of its population, and Los Angeles County, 48.6% of the population was White-only. The second largest racial group in all Block Groups within six miles of any Project segment was "some other race," at 22% of the total. The next largest was "Asian alone," at 8.0%. The ethnic group of "Hispanic or Latino" in the area within six miles of any Project Alternative was 43.3% of the total population. These percentages mirror the "White-only" proportions, when compared to the total populations of Kern and Los Angeles counties: higher proportions of "White-only" persons are associated with lower proportions of "some other race," Asian only, and Hispanic or Latino. Table 4.2.13-5 summarizes race and ethnicity.

An analysis was conducted for route Alternatives 1, 2 (Proposed Action), and 3 (Alternative 2a would affect the same Block Groups as Alternative 2, the Proposed Action). The results indicate that Alternative 2 had the lowest non-White proportion of total population within 6 miles in the year 2000, at 21.6%. Alternative 3 had the highest proportion, at 27.2%. Similarly, the proportion of Hispanic or Latino population was lowest for Alternative 1 and highest for Alternative 3. Table 6.6.12-1 shows the results of the Alternative route analysis.

TABLE 6.6.12-1. RACE AND ETHNIC SUMMARY, PERSONS WITHIN SIX MILES OF EACH ALTERNATIVE

		Alternative 1	Alternatives 2 and 2a	Alternative 3
White Alone	Number	119,099	134,699	249,018
	Percent of Total	77.5%	78.4%	72.8%
Black or African American Alone	Number	5,845	7,575	23,286
	Percent of Total	3.8%	4.4%	6.8%
American Indian and Alaska Native Alone	Number	983	1,130	2,572
	Percent of Total	0.6%	0.7%	0.8%
Asian Alone	Number	8,401	8,932	16,035
	Percent of Total	5.5%	5.2%	4.7%
Native Hawaiian and Other Pacific Islander Alone	Number	328	334	615
	Percent of Total	0.2%	0.2%	0.2%
Some Other Race Alone	Number	12,237	11,985	34,233
	Percent of Total	8.0%	7.0%	10.0%
Two or More Races	Number	6,425	7,173	16,508
	Percent of Total	4.2%	4.2%	4.8%
Hispanic or Latino	Number	31,415	32,101	76,358
	Percent of Total	20.4%	18.7%	22.3%
Total Population		**153,647**	**171,828**	**342,267**

Low Income Status

The Environmental Justice analysis also addressed the low-income populations living in Census Block Groups within six miles of any Project Alternative. This analysis focused on Census 2000 data regarding the number of persons living below the "poverty threshold" in 1999.

The Census Bureau determines the poverty threshold. The poverty threshold represents a federal government estimate of the point below which a household of a given size has cash income insufficient to meet minimal food and other basic needs. It is set at a national level and does not vary by the region, only by the age of the householder and size of the household. It is adjusted each year using the Consumer Price Index. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps). The poverty rate used to classify tracts is based on calculations for people in the "poverty universe." The poverty universe, when using data from Census 2000, includes all U.S. residents except the institutionalized population, people in military group quarters and college dormitories, and unrelated individuals under 15 years of age. For further information on how the poverty thresholds were developed and subsequent changes in them, see Fisher (1992).

No specific thresholds are specified to guide Environmental Justice evaluation for low income persons. However, an evaluation of the populations living in households with incomes below the Federally-specified poverty line[1] is called for.

An analysis was conducted for route Alternatives 1, 2 (Proposed Action), and 3 (Alternative 2a would affect the same Block Groups as Alternative 2, the Proposed Action). The results indicate that Alternative 2 had the lowest proportion of total population with incomes under the poverty threshold within six miles in the year 1999 (the year for which year 2000 Census income data were reported), at 6.9%. Alternative 3 had the highest proportion, at 16.4%. Table 6.6.12-2 shows the results of the Alternative route analysis.

TABLE 6.6.12-2. POVERTY STATUS SUMMARY, YEAR 1999

Alternative	TOTAL POPULATION	Total for Whom Poverty Status Was Determined	Income Below Poverty Level	Percent Below Poverty Level	Income Below 150% of Poverty Level	Percent Below 150% of Poverty Level
Alternative 1	154,737	146,609	10,536	7.2%	18,198	12.4%
Alternatives 2 and 2a	173,656	164,608	11,392	6.9%	20,144	12.2%
Alternative 3	339,452	323,499	32,465	10.0%	52,903	16.4%

*Persons within six miles of each Alternative

Supplemental Community Analysis

The National Guidance recommended threshold for determining a low-income population is based on "very low-income" and/or "low-income" characteristics. The very low-income characteristic is defined as persons in households below the U.S. Census Bureau's poverty threshold. The low-income characteristic is defined as below two times the poverty threshold (EPA 1998). The poverty thresholds are designated by the Census Bureau for the nation. Consistent with the Environmental Justice analysis provided in the Draft EIS/EIR, the Census 2000 data were used in this analysis.

An Environmental Justice analysis requires analyzing for high and adverse impacts. The CEQ guidance indicates that when determining whether the effects are high and adverse, agencies are to consider whether the risks or rates of impact "are significant (as employed by NEPA) or above generally accepted norms." It also requires analyzing if the impact on the minority or low-income population is disproportionately high and adverse. Although none of the published guidelines define the term "disproportionately high and adverse," CEQ states that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population.

This guidance also relates to the pathway of potential Environmental Justice impacts. Environmental Justice analysis guidance implies that in an absence of significant impact pathways (noise, dust, land-use, visual, and land value impacts), no significant Environmental Justice impacts would occur. Additionally, even if significant impacts would occur, significant adverse impacts on Environmental Justice may still not occur, unless the Environmental Justice populations within affected areas are subject to "disproportionate" impacts compared to the population as a whole.

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[1] See above footnote. The Federal poverty level threshold depends on size of household.

Impact types such as construction noise, dust, other air pollutants, visual impacts, and potential land value impacts would be similar along all Alternative routes because the construction techniques needed would be essentially the same. Helicopter construction areas would incur different impacts, but they would occur only on the ANF, affecting no Environmental Justice communities. Thus, regardless of the income level of the impacted community, the actual pathways and magnitudes of their impacts would be equivalent, and actual impacts would not vary according to the type of impacted community. However, one of the primary bases for Environmental Justice concerns is that minority and low-income populations may be more sensitive to a given level of impact than non-Environmental Justice populations.

The Environmental Justice supplemental community analysis study area is an approximately six mile radius surrounding the Proposed Action and action Alternatives. All census tracts touching on the six mile radius were included in the analysis. The potential effects of the Project (construction noise, dust and other air quality impacts, land value impacts, visual impacts, and community impacts from disruption of continuity of land-use patterns) that would be relevant for Environmental Justice analysis are likely to occur within about a two-mile distance; a six-mile distance was used to ensure geographic comprehensiveness.

Dust, noise, and other air pollutants, if any, would be noticeable within no more than about a half-mile distance. Community impacts from land-use disruption would also be localized. Visual impacts relevant to Environmental Justice probably have the largest potential area of impact; these could occur almost solely within the viewshed of the Project facilities. New towers could be visible up to four to five miles, at most, if no topographic barriers exist from vantage points.

Noise impacts from the action Alternatives due to exceedances of ambient noise levels and local noise standards are expected to be significant during construction due to construction noise, and during operation due to corona and substation noise during wet weather. These impacts would be very localized, occurring within a short distance of construction activities. Some construction-related air quality impacts for the action Alternatives, even after mitigation measures, were identified as significant. These include impacts on NO_x, VOC, CO, PM_{10}, and $PM_{2.5}$. Similar to noise impacts, these impacts, largely from construction dust, would be very localized within a short distance of construction activities. No significant impacts on socioeconomic resources were identified. This includes no significant impacts on land values. Land-use impacts from disruption of community activities from discontinuities caused by transmission line ROW were also not identified as significant. Visual impacts were identified as significant due to changes in landscape character from newly constructed transmission towers. The geographic extent of these impacts would be within facility viewsheds of the individual action Alternatives, which encompass a much larger distance than the very localized noise and air quality impacts.

The Environmental Justice analysis showed that there were relatively few Block Groups within six miles of the action Alternatives that contained Environmental Justice communities (see Table EJ-1 in Appendix F to this Final EIS/EIR). Generally, the area has both much smaller minority and low-income communities than the Los Angeles/Kern County area as a whole. This lack of disadvantaged communities indicates that, overall, the Alternatives would not have significant adverse Environmental Justice impacts.

For Alternative 1, the only Block Group included as potentially affected that was not common to all action Alternatives is in Ventura County (see Table EJ-2 in Appendix F to this Final EIS/EIR). However, this Block Group (Block Group 2, Census Tract 2) is located well beyond two miles' distance from the potential Project facilities (but within six miles). Visual impacts at this distance would be minimal, because this Block Group would not be within the viewshed of any Alternative 1 facilities due to topography.

For Alternative 2, all Block Groups identified as potentially affected were common to all action Alternatives. Thus, no advantage for any alternative, in terms of Environmental Justice, would result from these Block Groups' racial, ethnic, or income characteristics.

Alternative 3 includes 17 potentially affected, unique (not included in the other two Alternatives) Block Groups. All but one of these Block Groups is over two miles from Alternative 3 and, as such, would be outside of the range for most potential Environmental Justice impacts, with the exception of visual effects. The one exception is Block Group 1, Census Tract 9102.05, which would be traversed by Alternative 3 facilities. The proportion of persons living under the poverty threshold in this Block group was 24.1 percent. The route comes within a mile of the area of this Block Group, but does not traverse areas that had high populations (more than scattered homes). Some additional development, in the form of additional scattered single family housing, has occurred in this Census Block since the data were collected, but none appears to be in the form of concentrations of low-income persons. This Block Group unique to Alternative 3 would experience the greatest potential Environmental Justice impacts, but the impacts would be moderate at most, due to potential visual impacts at nearly a one-mile distance.

The nine potentially affected Block Groups that were common to more than one action Alternative were also individually examined. Of these nine duplicate Block Groups, only one (Block Group 4, Census Tract 60.05, Kern County) would actually be traversed by the Project facilities. This Block Group is geographically very large, stretching from Frazier Park to the west, north to Arvin and Tehachapi, and to Mojave in the east. It is lightly settled with no concentration of minorities or low income persons close to the Project Alternatives. Thus, no significant adverse impact is expected to the Block Group that would be traversed by facilities. Additionally, of the nine duplicate Block Groups, two (Block Groups 1 and 2, Census Tract 59, Kern County) would be within about one mile of the Project Alternatives; hence, the Project would possibly be visible but would not significantly affect these Block Groups. The remaining Block Groups had portions greater than one mile from the Project facilities.

In summary, considering the proximity factors described above, only Alternative 3 would entail a potentially moderate but less than significant impact on Environmental Justice communities. This would be due to some of the population in one impacted Census Block Group being identified as being of Environmental Justice concern due to its low-income population.

A further Environmental Justice concern is related to the existing burdens that Environmental Justice populations may already be bearing from existing facilities, which may be exacerbated by the Project. There are numerous transmission lines in the Antelope Valley and in the southern portion of the study area near and in Santa Clarita, which may or may not have caused significant adverse impacts to Environmental Justice communities. Impacts of these existing facilities have not been specifically addressed in this analysis. However, as stated above, the adverse Environmental Justice impacts of the Project Alternatives are extremely limited, to one moderately impacted community along Alternative 3. Since these impacts would arise from potential new construction of the double-circuit 230 kV transmission line where both 500 kV and 230 kV lines already exist, it is possible that these impacts would occur in communities that were already affected by previously constructed, currently existing transmission lines.

6.7 ENERGY CONSERVATION

Pursuant to Appendix F (Energy Conservation) of the CEQA Guidelines, an EIR must address potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

As described in Chapter 1, Purpose and Need, LADWP's purpose and need for BRRTP is to reduce the environmental impacts associated with greenhouse gas emissions and create a more sustainable environment; to assist LADWP to meet Renewable Portfolio Standard (RPS) goals; to meet the growing electrical energy demands of the City of Los Angeles; to allow interconnection and expansion of LADWP's renewable energy in the Tehachapi Mountains and Mojave Desert areas; to increase LADWP's system reliability and flexibility in the utilization of renewable energy sources; and to enable the delivery of renewable energy.

The Proposed Action is planned to support renewable wind and solar energy projects. Renewable projects typically do not involve the use of fossil fuels, such as natural gas, for generation of electricity. The nature of the Proposed Action and action Alternatives would increase the opportunities for utilizing renewable sources for energy production, thereby reducing emissions by providing additional opportunities for cleaner sources of energy to be delivered to the LADWP service area. By allowing the delivery of potential renewable energy sources such as solar and wind from the high quality renewable energy areas of the Mojave Desert and Tehachapi Mountains, LADWP estimates the Proposed Action could reduce the City's GHG emissions by approximately 2.8 million metric tons of CO_2 emissions per year (based on estimates of the additional renewable generation that would be made accessible to LADWP by BRRTP and the assumed associated displacement of existing LADWP fossil fuel energy sources (N. Parker personal communication 2009).

Implementation of the Proposed Action or action Alternatives would result in the consumption of energy through fuel needed for construction activities. Fuel would be needed for construction vehicles, construction equipment, construction operations, and helicopter use. Additionally, construction would require the manufacture of new materials, some of which would not be recyclable at the end of the Project's lifetime. The anticipated equipment, vehicles, and materials required for construction of the Proposed Action and action Alternatives are described in Chapter 2 (Proposed Action and Alternatives).

Maintenance and operations and inspection of the Proposed Action and action Alternatives would not change appreciably from LADWP's existing activities in the Project area, and thus would not cause a substantial increase in the consumption or use of nonrenewable resources.

The Proposed Action and action Alternatives are not intended to supply power for any particular development project, either directly or indirectly, and would not result in direct growth-inducing impacts. Growth in the LADWP service area is expected to occur with or without implementation of the Proposed Action or Alternatives, and the Proposed Action would not increase energy consumption above what population growth itself would do.

LADWP has existing energy conservation measures and programs to reduce wasteful, inefficient, and unnecessary consumption of energy within its system. No increases in inefficiencies or unnecessary energy consumption are expected to occur as a direct or indirect consequence of the Proposed Action or Alternatives, and no mitigation measures above those already present in this Final EIS/EIR would be necessary.

CHAPTER 7: COORDINATION AND CONSULTATION

7.1 INTRODUCTION

This chapter summarizes public and agency involvement activities undertaken by the U.S. Department of Agriculture, Forest Service (USFS), the U.S. Department of the Interior, Bureau of Land Management (BLM), and the City of Los Angeles Department of Water and Power (LADWP). These activities have been conducted for the Barren Ridge Renewable Transmission Project (BRRTP or Project) in order to satisfy California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements for public scoping and agency consultation and coordination. Federal agencies preparing an Environmental Impact Statement (EIS) must "make diligent efforts to involve the public in preparing and implementing their NEPA procedures" (40 CFR 1506.6(a)). Council on Environmental Quality (CEQ) regulations provide guidance on the scoping process, including inviting participation of affected federal, state, and local agencies, Native American Tribes, as well as any other interested parties (40 CFR 1501.7(a)(1)). State CEQA Guidelines Section 15129 states that an "EIR [Environmental Impact Report] shall identify all federal, state, or local agencies, other organizations, and private individuals consulted in preparing the draft EIR." USFS and BLM are the federal Lead Agencies pursuant to NEPA, and LADWP is the Lead Agency under CEQA. Appendix P of this Final EIS/EIR presents the distribution list that identifies the entities that received a copy of the Draft EIS/EIR.

Consistent with the NEPA and CEQA procedures, public participation and agency consultation for this Project have been accomplished through issuance of public notices, public scoping meetings, and formal and informal consultation with agencies, stakeholders, landowners, and Native American Tribes. The consultation and coordination process helped determine the scope of this Final EIS/EIR, identify a range of alternatives and mitigation measures, and define potential environmental impacts and impact significance. The Project team sought public and agency input on the Project by encouraging the review of the Draft EIS/EIR.

7.2 PRE-APPLICATION AND PRE-SCOPING ACTIVITIES

As a preliminary step in the environmental planning process, LADWP conducted pre-application meetings with the BLM and USFS in September 2006. On February 12, 2007, LADWP officially submitted a right-of-way application to the BLM and a Special Use Authorization Application to the USFS for the Proposed Action, then titled the Barren Ridge-Castaic Transmission Project. Later that same year on October 30, November 6 and November 10, LADWP, acting as the Project proponent, hosted a series of three informational public meetings in the communities of Mojave, Agua Dulce and Lake Elizabeth to share information about the Project and explain the forthcoming environmental review process and opportunities for public input. In March of 2008, prior to the initiation of the formal scoping process, LADWP changed the title of Proposed Action to its current name, the Barren Ridge Renewable Transmission Project.

7.3 SCOPING PROCESS

Scoping is an early and open process for determining the scope of issues to be addressed, and identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the EIS/EIR (40 CFR 1501.7). The public, affected agencies, Native American Tribes, and other interested parties are invited to participate in the environmental review process. USFS, BLM and LADWP conducted a 31-day public scoping period from April 7, 2008, through May 7, 2008. Below is a summary of the scoping process. Details regarding the scoping process are documented in the Scoping Report and may be viewed on the Project website at http://www.ladwp.com/barrenridge.

7.3.1 NOTICE OF INTENT

To comply with NEPA 40 CFR 1508.22, the USFS and BLM published a Notice of Intent (NOI) to prepare a joint EIS/EIR for the BRRTP in the Federal Register (Volume 73, Number 67) on April 7, 2008. The NOI initiated the public scoping period for the Draft EIS/EIR and requested all comments be received by May 7, 2008. It described the Proposed Action and Alternatives, the agencies' scoping and environmental review process, and contact information. It served as an invitation for other federal agencies to provide comments on the scope and content of the Draft EIS/EIR.

7.3.2 NOTICE OF PREPARATION

A Notice of Preparation (NOP) was issued pursuant to 14 CFR 15082 and is similar to the NOI that initiated the public scoping period and summarized the Proposed Action, location, the significant effects on the environment, and time, date and place of public scoping meetings. The NOP was filed with the California State Clearinghouse on April 7, 2008 (SCH #2008041038) and the review period ended on May 7, 2008.

The USFS, BLM and LADWP distributed approximately 500 NOPs to federal, State, regional, and local agencies, elected officials, organizations and Native American groups. The mailing list included the following approximate distribution:

- 383 Agencies (65 city, 105 county, 106 State, 107 federal)
- 12 Native American Tribes
- 99 elected officials
- 4 organizations

7.3.3 SCOPING MEETINGS

USFS, BLM and LADWP conducted seven public scoping meetings from April 22 to May 1, 2008 within the Project area in the locations listed below in Table 7-1. The scoping meetings provided an opportunity to share information regarding the Proposed Action and the decision-making processes, and listen to public and agency views on the range of issues and alternatives to be considered during the preparation of the Draft EIS/EIR. All meetings were conducted in an "open house" format to allow participants to attend any time between 5:30 p.m. and 8:30 p.m. A brief presentation video was shown by the Project team at 7 p.m. followed by a general Q&A session.

TABLE 7-1. PUBLIC SCOPING MEETING LOCATIONS

Date	Location	Number of people signed in	# comments	
			Oral	Written
Tuesday, April 22, 2008	Santa Clarita Activity Center 20880 Centre Point Parkway, Santa Clarita	14	20	9
Wednesday, April 23, 2008	Agua Dulce Women's Club 33201 Agua Dulce Canyon, Agua Dulce	32	12	8
Thursday, April 24, 2008	Castaic Middle School 28900 Hillcrest Parkway, Castaic	3	0	0
Monday, April 28, 2008	Hughes-Elizabeth Lakes Union School 16633 Elizabeth Lake Road, Lake Hughes	52	36	30
Tuesday, April 29, 2008	Frazier Mountain High School 700 Falcon Way, Lebec	2	0	1
Wednesday. April 30, 2008	Hillview School 40525 Peonza Lane, Palmdale	14	4	11
Thursday, May 1, 2008	California City Middle School 9736 Redwood Blvd, California City	5	0	1
	Totals	122	72	60

Notification

Newsletters

In addition to the distribution of the NOP and publication of the NOI, approximately 7,200 newsletters were sent to agency representatives, elected officials, Native American Tribes, interested parties and organizations, and property owners within 500 feet of both sides of the Proposed Action and preliminary Alternatives in Los Angeles and Kern Counties. The newsletters contained the Project description, purpose and need for the Project, a map, description of the environmental review process, an announcement of public scoping meetings, and contact information, along with a Spanish translation of the information.

Newspaper Advertisements

The scoping meetings were also advertised in the eight local newspapers listed below in Table 7-2. The advertisements provided a brief Project description and meeting locations, times, and dates, and encouraged the public to attend the meetings.

TABLE 7-2. NEWSPAPERS UTILIZED FOR ADVERTISEMENT OF THE 2008 SCOPING MEETINGS

Publication	Advertisement Dates
Los Angeles Times	April 7 and 14
La Opinion (Spanish)	April 8 and 14
The Signal	April 7 and 14
Antelope Valley Press	April 8 and 14
The Daily Independent	April 8 and 14
The News Review	April 9 and 16
Mojave Desert News	April 10 and 17
Agua Dulce/Acton County Journal	April 12 and 19

Agency and Elected Official Contacts

As indicated above, agencies and elected officials were distributed an NOP for review and comment on the Project. Following the mailing of the NOP, all agencies—federal, State and local—were contacted via phone to provide information on the Project as well as to determine interest to meet and discuss the Project.

LADWP's Legislative Affairs group also sent out letters to elected officials within the Project area, prior to the mailings of the NOP and Newsletters, to serve as an additional advance notification for the forthcoming NOP, Newsletters and Scoping Meetings. The letters also offered personal meetings with each representative, if they desired.

During the scoping period, LADWP's Legislative Affairs group also sent letters to Town Councils within the Project area offering personal meetings with each group or representative. Four Town Councils requested briefings and members of LADWP attended the meetings (see Table 7-3).

TABLE 7-3. 2008 TOWN COUNCIL MEETINGS.

Town Council	Date and Time	Location
Antelope Acres Town Council	June 18, 6 p.m.	47701 90th St Antelope Acres
Association of Rural Town Councils	June 26, 7 p.m.	L.A. County Fire Station 129, Lancaster
Lakes Town Council	July 12, 8:30 a.m.	Lake Hughes Community Center 17520 Elizabeth Lakes Road Lake Hughes
Leona Valley Town Council	July 14, 7:30 p.m.	Leona Valley Community Center 8367 Elizabeth Lakes Road Leona Valley

7.3.4 OUTREACH

USFS, BLM and LADWP provided different modes for the public and agencies to ask questions or leave comments regarding the BRRTP. A toll-free hotline, e-mail address, and website were established at the beginning of the scoping period.

Website

Information regarding the Barren Ridge Renewable Transmission Project is available at http://www.ladwp.com/barrenridge. The NOI, NOP, Newsletters, and all public review material are available on the website. The website will be updated throughout the environmental review period as information is made available. Additional information may also be available at http://www.fs.fed.us/r5/angeles and http://www.ca.blm.gov/ridgecrest.

E-mail Address

An e-mail address was established for the Project (BRRTP@powereng.com) to provide another mode of receiving comments. All comments received via e-mail were added to the Project record and sent an automatic reply acknowledging receipt of the e-mail.

Toll-Free Hotline

A toll-free Project Hotline, (877) 440-3592, was provided as another means for leaving comments and receiving more information on the Project. A call tree was established that gave callers the following options: 1) receive Project information, 2) meeting and event updates, 3) Project schedule, and 4) add callers to the mailing list or leave a question or comment. All messages were added to the Project record.

Press Releases

On April 7, 2008 LADWP provided a press release announcing the launch of the environmental study for the BRRTP. A press release was also provided by BLM on April 24, 2008 announcing the Notice of Intent to prepare a joint EIS/EIR for the Barren Ridge Renewable Transmission Project. USFS published the start of the BRRTP's scoping period in their Quarterly Schedule of Proposed Action (SOPA) Report (March/June 2008).

7.3.5 SCOPING COMMENTS SUMMARY

This section summarizes the comments received from the public and agencies during the scoping period for the BRRTP Draft EIS/EIR. The scoping review period was from April 7, 2008 to May 8, 2008; however, all comments received through July 2008 were incorporated into the Scoping Report. A total of 231 comments were received during the scoping period. The comments came from various sources as summarized in Table 7-4. The comments were received at the scoping meetings, via phone, e-mail, and mail. If multiple comments covering the same subject or concern were received, those comments were counted as one comment. The comments, summarized below, were utilized by USFS, BLM and LADWP to determine the scope and significant issues to be analyzed in the Draft EIS/EIR.

TABLE 7-4. SOURCE OF SCOPING COMMENTS

Number of Comments	
132	Scoping Meeting Comments (oral and written)
59	Public
34	Agencies
2	Native American Tribes
4	Town Councils

Project Need and Objectives

The public expressed concerns regarding the transmission of renewable energy to the Los Angeles basin and questioned the amount of renewable energy available to LADWP from the Tehachapi Mountains and Mojave Desert areas. Other utility companies, like San Diego Gas & Electric (SDG&E) and Southern California Edison (SCE), have plans to use the same renewable resource areas. Some commenters suggested the City of Los Angeles generate renewable energy within the City and not in rural areas.

Alternatives

A large number of comments provided alternatives to the Proposed Action. Many residents recommended the use of tubular steel mono poles, instead of lattice steel structures, undergrounding of transmission lines, and use of only one tower-system (multi-circuits). Minor modifications to the Proposed Action and Alternatives that would minimize impacts to parcels were also suggested, such as a route along 110th Street connecting Segments F and H and modification around the community of Green Valley that would be located just over the ridge west of the community, along an existing fire road. Direct Current (DC) lines were recommended as an alternative to the proposed alternating current (AC), and the use of Niobium wire as an alternative to aluminum or copper wire was requested. Residents in the Project area also requested that the proposed transmission lines be located in designated utility corridors. Electrical generation within the City of Los Angeles was recommended to avoid additional transmission lines in rural communities. There was also an inquiry about upgrading the electrical transmission system to a 500 kV instead of 230 kV transmission system.

Human Environment Issues

Air Quality

The Air Quality Management District raised concerns regarding the potential air quality impacts from all phases of the Project, especially the construction of transmission lines and increased vehicular trips. Also of concern were wilderness areas, which are provided special consideration under the Clean Air Act. Pollution sources within 100 kilometers of wilderness areas should be summarized to help determine their potential impact. Additional summaries are needed where Project-related emissions are expected to occur within 10 km of a wilderness.

Cultural Resources

Cultural resources have been reported at or near the Proposed Action, the Historic Cochems Ranch Homestead (Alternative H, since eliminated as an Alternative), R-Ranch in the unincorporated community of Leona Valley, and Old Ridge Route on Alternative 1. USFS also identified prehistoric habitation and historic mining sites on Alternatives 2 and 2a and prehistoric sites along Alternative 3 that could potentially be impacted.

EMF

Many property owners were concerned about the increased EMF emissions, especially in corridors with existing high-voltage transmission lines.

Fire Safety

Many residents in and adjacent to the Angeles National Forest were concerned that, during wildfires, additional above-ground transmission lines could adversely affect fire suppression efforts and compromise their safety. Concern was also expressed for fire suppression considerations, both on the ground and in the air, and for the Project's possible impact on fire suppression flight paths and staging areas. They also noted that transmission lines have gone down in desert areas and started fires.

Land Use/Recreation and Wilderness

Numerous property owners were concerned with the acquisition of private property, eminent domain, and the expansion of transmission line rights-of-way and easements. It was suggested that heavily used recreation areas and wildlife corridors be avoided and open space be preserved.

Recreational facilities and trails, including the Angeles National Forest, BLM-managed lands, State Parks, Antelope Valley California Poppy Reserve, the eligible Wild and Scenic River, and Red Rock Canyon State Park, are all areas of concern. Another suggestion was that purchase of nature preserves be considered.

The agencies are concerned about the expansion of transmission line rights-of-way that may impact current and future projects and developments in the Project area. The Antelope Valley California Poppy Reserve, Angeles National Forest, Pacific Crest Trail (PCT), and State, local, and city parks may be affected by the Proposed Action and its Alternatives. The Southern California Association of Governments (SCAG) requested that the Project be consistent with its Regional Comprehensive Plan and Guide. USFS further expressed concern about the possibility of increased illegal off-highway vehicle use, and other unauthorized access, through the forest road systems due to increased access and improvements to existing roads.

Noise

Property owners in close proximity to existing transmission lines, as well as PCT users, already experience noise. They are concerned that additional transmission lines would increase noise to unacceptable values. Construction and maintenance activities may also increase noise for residents and trail users.

Property Values

Numerous property owners are concerned that the property values would decrease with additional transmission lines.

Public Health and Safety

Residents are concerned about the possible impacts to public health and the environment, and access to emergency response and information. Also of concern is that the roads built to construct and maintain the transmission lines would invite illegal off-road activity along transmission easements that may pose a safety threat to adjacent residents.

Public Services and Utilities

Comments recommended that effects of multiple siting of high-voltage transmission lines should be addressed. Coordination and sharing of transmission lines with other utility companies (like SCE and SDG&E) should be considered. Commenters also requested that new waste, hazardous waste generation, and increased traffic during construction be addressed in the Draft EIS/EIR.

Traffic

The California Department of Transportation and City of Lancaster are concerned about the potential for encroachment upon State transportation facilities and local roads. The Department of Public Works was concerned with the expected increase in traffic due to construction activities in the area.

Visual Resources

A significant concern from property owners in the Project area were visual impacts to homes, communities, and business. Also of concern were impacts to public spaces like parks, trails, the Angeles National Forest, PCT, Antelope Valley California Poppy Reserve, and Red Rock Canyon State Park. A commenter was concerned that the additional lighting from the towers and turbines[1] would adversely affect astronomy clubs. USFS expressed concern about possible impacts to Highway 2, which is a Scenic Byway. The agency further stated the desire for micro-pile construction.

Natural Environment Issues

Biological Resources

Significant concerns from many agencies, organizations, and the public were raised regarding the potential direct, indirect, and cumulative impacts to rare, threatened, endangered and special-status species and habitats. Of particular concern were wildlife movements and migration paths such as the San Andreas Rift Zone Significant Ecological Area (SEA). USFS has considerable concern for Riparian Conservation Areas throughout the forest lands, the potential impacts of long-term maintenance plans for the access roads on these and other sensitive areas, and potential spread of invasive plant species (including noxious weeds) during the construction process of the Project. BLM expressed some concern regarding potential increased raptor predation of sensitive species due to the use of lattice towers.

Cumulative Impacts

A number of agencies were concerned about the cumulative impacts of past, present and future projects in the Project area, such as transmission line projects, renewable energy projects, air force base, highways, and pipelines. Cumulative impacts to biological resources and parks would also be addressed.

Earth Resources

USFS and BLM have both expressed concern with potential impacts on paleontological and mineralogical resources throughout the Project area, including sedimentary rocks on the Ridge Route Basin and fossils along the Garlock Fault.

Hydrology and Water Quality

The Regional Water Quality Control Board raised concerns regarding stormwater run-off prevention and impacts to drainages, wetlands, Waters of the State, Waters of the U.S., and blue-line (intermittent and ephemeral) streams. The California Department of Fish and Game opposed elimination of watercourses and/or the canalization of natural and manmade drainages or conversion of subsurface drains. Segment H, since eliminated as an Alternative, would have been located in a drainage basin/area of the Amargosa and watershed of the San Andreas (Leona) Rift Zone. SCAG encourages "watershed management" programs and strategies and water reclamation. BLM was concerned about grading and sub-grading roads for maintenance causing a channeling effect for water direction by building up berms.

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[1] A comment was received regarding wind turbines; however, no turbines are proposed as part of the Project.

Other Comments

Property owners in the Project area had a number of suggestions. The Cities of Lancaster, Antelope Acres, Agua Dulce, and Saugus requested meetings in their communities. An extension of the public comment and review period was recommended. Increased notification to property owners to a half mile of the Proposed Action and Alternatives was also requested. A publication in the Mountain Yodeler was suggested to inform residents in the Project area. To gain more public interest for the Project, it was suggested that public mailings contain captions (i.e. "in your backyard") and pictures of transmission line towers.

7.4 INFORMATIONAL PUBLIC MEETINGS

LADWP conducted five informational public meetings from February 17 through 26, 2009 to update the public on scoping results, study results, and the evaluation of alternative transmission line routes. See Table 7-5 for dates, locations, attendance, and number of comments received. All meetings were conducted in an "open house" format to allow participants to attend any time between 5:30 p.m. and 8:30 p.m. A brief video presentation was shown by the Project team at 7 p.m., followed by a general question and answer session.

TABLE 7-5. INFORMATIONAL PUBLIC MEETINGS

Date	Location	Number of People Signed In	Number of Comments	
			Written	Oral
Feb. 17, 2009	Hughes-Elizabeth Lakes Union School 16633 Elizabeth Lake Road, Lake Hughes	28	5	11
Feb. 18, 2009	Mojave Veterans Building 15580 "O" Street, Mojave	8	7	1
Feb. 24, 2009	Agua Dulce Elementary School 11311 W. Frascati Street, Agua Dulce	20	4	27
Feb. 25, 2009	Mountainview School 22201 W. Cypress Place, Saugus	8	6	12
Feb. 27, 2009	Leona Valley Community Center 8367 Elizabeth Lake Road, Leona Valley	53	12	31
	TOTAL	117	34	82

7.4.1 NOTIFICATION

Newsletters

In December 2008, approximately 6,300 newsletters (Newsletter #2) were distributed to agency representatives, elected officials, Native American Tribes, interested parties and organizations, and property owners within 500 feet of both sides of the Proposed Action and preliminary Alternatives in Los Angeles and Kern Counties. Newsletter #2 provided a summary about the scoping process, environmental studies being conducted, and upcoming public involvement opportunities.

In February 2008, Newsletter #3 (postcard) announced the informational public meetings. Over 6,300 postcards and 600 electronic copies were mailed to agency representatives, elected officials, Native American Tribes, interested parties and organizations, and property owners within 500 feet of both sides of the Proposed Action and preliminary Alternatives in Los Angeles and Kern Counties.

Newspaper Advertisements

The informational public meetings were announced in thirteen local newspapers. The advertisements provided a brief Project description and meeting locations, times, and dates, and encouraged the public to attend the meetings. A Spanish translation of the advertisement was published in La Opinion newspaper.

TABLE 7-6. NEWSPAPERS UTILIZED FOR ADVERTISEMENT OF THE INFORMATIONAL PUBLIC MEETINGS.

Newspaper	Area Covered	Publication Date
Los Angeles Times	Los Angeles communities	Feb. 2, 2009
Antelope Valley Press	Antelope Valley	Feb. 2, 2009
The Signal	Santa Clarita	Feb. 2, 2009
Agua Dulce/Acton Country Journal	Agua Dulce/Acton	Jan. 31,2009 Feb. 7, 2009
Mojave Desert News	California City	Jan. 29, 2009 Feb. 5, 2009
Ridgecrest Daily Independent	Mojave to Olancha	Feb. 3 & 10, 2009
News Review	Ridgecrest, China Lake and Inyokern	Feb. 4, 2009
La Opinion (Spanish)	Los Angeles communities	Feb. 2, 2009
Mountain Yodeler	Elizabeth Lakes, Green Valley, Leona Valley	Feb 2009
Cherry Chapters: the Leona Valley Newsletter	Leona Valley	Feb 2009
Acton/Agua Dulce News	Acton/Agua Dulce area	Feb. 9, 2009
Rosamond News	Rosamond/Kern County Area	Feb. 9, 2009
Lake Los Angeles News	Lake Los Angeles Area	Feb. 9, 2009

Other Notification

LADWP also updated the Project website (http://www.ladwp.com/barrenridge) and toll-free Project hotline with the informational public meeting information, as well as publishing a press release on February 17, 2009.

7.4.2 SUMMARY OF COMMENTS RECEIVED AFTER SCOPING AND PRIOR TO THE PUBLICATION OF THE DRAFT EIS/EIR

One hundred fifty-nine comments were received from July 2008 to March 2009 in a number of ways—during the informational public meetings and via Project hotline, e-mail, and mail. Below is a summary of the issues and comments that were raised by the public and agencies and that was added to the Project record.

Alternatives

Many of the same alternatives that were suggested during the scoping period were also expressed at the informational public meetings, such as in-basin generation of renewable resources, utilization of a 500 kV transmission line system, multi-circuit towers, tubular steel poles, and undergrounding. In addition to those alternatives, the public also suggested:

- Consideration of moving the 110th Street Modification to 115th Street so that it follows the SCE Tehachapi Renewable Transmission Project's proposed alignments through the area.
- Reconsideration of Segment D for further study in the Draft EIS/EIR (especially residents in the unincorporated communities of Green Valley, Elizabeth Lakes, Leona Valley and Agua Dulce.)

Human Environment Issues

Cultural Resources

The public wanted possible impacts to La Casa de Miguel Ortiz (an adobe home built in the late 1800s that was once part of Edward Beale's Rancho La Liebre) and Native Chumash resources in the Project area to be considered.

Fire Safety

Many residents in and adjacent to the Angeles National Forest expressed concern for fire suppression operations, both on the ground and in the air, and the Project's possible impact on fire suppression flight paths, staging areas, and the Bouquet Canyon Reservoir. The County of Los Angeles Fire Department requested that potential impacts to fuel modification for Fire Zone 4 be addressed in the Draft EIS/EIR.

Land Use/Recreation and Wilderness

A majority of the commenters raised questions regarding the acquisition of private property, eminent domain, and the expansion of transmission line rights-of-way and easements. Residents were concerned about impacts to residences, agricultural farms, communities, and rural areas being traversed by transmission lines. Comments also addressed the potential impacts of the Proposed Action on current and future projects and developments in the Project area.

Property Values

Property owners inquired about the affect additional transmission lines may have on property values.

Public Services, Health and Safety

Residents are inquired about the adequacy of police and fire services and the potential for an increased risk of cancer along transmission lines, and requested that these issues be evaluated in the environmental analysis.

Socioeconomics

Residents inquired if the Project would increase jobs and future development in Kern County and in the Project area.

Traffic

Residents in the Project area inquired about the potential for increased traffic along Agua Dulce Road and Sierra Highway and private service roads in Haskell Canyon, and requested that the issue be analyzed in the Draft EIS/EIR.

Visual Resources

Many unincorporated communities, such as Elizabeth Lake, Green Valley, Leona Valley, Agua Dulce, and Holiday Valley Estates, were concerned about visual impacts to their homes, communities, and businesses. They inquired about impacts to Johnson Hill, San Francisquito Creek, and Mt. Pinos.

Natural Environment Issues

Biological Resources

The public inquired about the potential avian risk of electrocution from towers and impacts to migratory birds, wildlife, and raptor nests and owls. Some areas of concern were Lake Elizabeth, riparian areas along San Francisquito Creek, and Leona Valley.

Hydrology and Water Quality

A property owner was concerned about possible impacts to an existing well in close proximity to the existing transmission lines. Residents in the Project area requested that impacts to watersheds and marshes, San Francisquito Creek, and Lake Elizabeth and environs be considered.

Cumulative Impacts

Residents inquired about cumulative impacts from transmission lines and renewable resource developments in the Project area and segmentation of transmission line projects. Residents questioned if LADWP would be proposing additional transmission lines in the near future.

Other Comments

It was suggested that the public notices be advertised in adjudicated newspapers in the Project area, such as the Acton and Agua Dulce News, and Vanguard News. As mitigation for the Proposed Action, it was suggested that LADWP purchase an environmental mitigation bank in the Project area.

7.5 AGENCY CONTACTS

In compliance with NEPA procedures 40 CFR 1506.6 (a), 40 CFR 1501.7(a)(1), and CEQA Guidelines Section 15129, Table 7-7 below identifies federal, State, or local agencies, other organizations, and private individuals contacted in preparation of the Draft EIS/EIR and Final EIS/EIR.

TABLE 7-7. AGENCY CONTACT SUMMARY[1]

AGENCY	DEPARTMENT	LAST NAME	FIRST NAME	TITLE
Federal Agencies				
USDI Bureau of Land Management	Ridgecrest Field Office	Villalobos	Hector	Field Office Manager
USDI Bureau of Land Management	Ridgecrest Field Office	Gum	Linn	Supervisory Geologist
USDI Bureau of Land Management	California Desert District Office	Elser	Lynnette	NEPA Coordinator
USDI Bureau of Land Management	Ridgecrest Field Office	Rodriguez	Paul	Realty Specialist
USDA Forest Service	Angeles National Forest	Dumpis	Martin	Deputy Forest Supervisor
USDA Forest Service	Angeles National Forest	Hawkins	Robert	Project Manager
USDA Forest Service	Angeles National Forest	Seastrand	Justin	Special Use Coordinator
USDA Forest Service	Angeles National Forest	Contreras	Thomas A.	Forest Supervisor
USDA Forest Service	Angeles National Forest, Santa Clara Mojave Rivers Ranger District	Blount	Bob	District Ranger
U.S. Fish and Wildlife Service	Ventura Office	Snyder-Velto	Della	Fire Ecologist
Department of Defense	Edwards Air Force Base	Rigol	Hank	Sustainability Officer
U.S. Army Corps of Engineers,	Los Angeles District	Magness, IV	Col. Thomas H.	District Commander
Federal Aviation Administration	Western-Pacific Region	Withycombe	William C.	Regional Administrator
Federal Highway Administration	Resource Office	Randall	Lisa	Planning Technical Service Team Leader
Advisory Council on Historic Preservation	Office of Federal Agency Programs	Reid	Nelson	Director
State Agencies				
California Energy Commission		Bartridge	Jim	
California Department of Transportation	District 6	Bowen	Carrie	Environmental Division Chief
California Department of Transportation	District 7	Kosinski	Ron	Environmental Planning District Director
California Department of Conservation	Division of Land Resources Protection	Leahy	Brian R.	Assistant Director
California Department of Fish and Game		Bailey	Craig	Environmental Scientist
California Department of Fish and Game	South Coast Region	Wilson	Erinn	Environmental Scientist
California Native American Heritage Commission		Myers	Larry	Executive Secretary
California State Lands		Brand	Marina	Assistant Division Chief, Environmental Planning
California Department of Water Resources		Johns	Jerry	Deputy Director, Water Resources Planning & Management
California Public Utilities Commission		Barnsdale	Andrew	Environmental Project Manager
California Department of Forestry and Fire Protection		Snyder	Bill	Deputy Director, Resource Management

AGENCY	DEPARTMENT	LAST NAME	FIRST NAME	TITLE
California Department of Parks and Recreation	Tehachapi District	Coleman	Ruth	Director
State Historic Preservation Office		Wayne	Donaldson	
Regional Agencies				
Southern California Association of Governments	Planning and Policy Department	Gosnell	Jim	Deputy Executive Director
Kern Council of Governments		Brummett	Ronald	Executive director
Kern Council of Governments		Hildebrand	Darrel	Assistant Director
Antelope Valley Air Quality Management District		Heaston	Eldon	Executive Director
South Coast Air Quality Management District		Chang	Elaine C.	Deputy Executive Officer
Lahontan Regional Water Quality Control Board		Mitton	Cindi	Senior Water Resources Control Engineer
Los Angeles Regional Water Quality Control Board		Carrillo	Valarie	401 Certification
County Agencies Kern County				
Kern County	Planning Department	James	Ted	Director
Kern County	Planning Department	Oviat	Lorelei H.	Division Chief
Kern County	Roads Department	Pope	Craig M.	Road Commissioner
Kern County	Office of Education	Reider	Dr. Larry	Superintendent
Kern County	Department of Parks and Recreation	Lerude	Robert	Director
County Agencies L.A. County				
Los Angeles County	Office of Education	Robles	Darline P.	Superintendent
County of Los Angeles	Department of Parks and Recreation	Guiney	Russ	Director
Los Angeles County	Department of Public Works	Wolfe	Donald L.	Director/Road Commissioner
Los Angeles County	Fire Department	Todd	John R.	Chief, Forestry Division
Los Angeles County	Fire Department	Cosey	Gerald	Assistant Fire Chief
Los Angeles County	Department of Regional Planning	McClendon	Bruce	Planning Director
City/Local Agencies (Kern County)				
City of California City	Planning	Terneuzen	Roger	Commissioner
Mojave Unified School District		Phelps	Larry	Superintendent
Southern Kern Unified School District		Van Norman	Rodney	Superintendent
City/Local Agencies (L.A. County)				
Los Angeles	Department of City Planning	Howe	Con	Director
Los Angeles	Department of City Planning	Sutton	Robert A.	Deputy Director

AGENCY	DEPARTMENT	LAST NAME	FIRST NAME	TITLE
Los Angeles	Department of City Planning	Hamilton	Gordon	Deputy Director
Los Angeles	Department of City Planning	Eberhard	Franklin P.	Deputy Director
City of Santa Clarita	Planning	Follstal	Fred L.	Senior Planner
City of Santa Clarita	Community Development	Brotzman	Paul	Director
City of Santa Clarita	Planning	Pulskamp	Kenneth	City Manager
City of Lancaster		Swain	Jocelyn	Assistant Planner
City of Palmdale	Planning	Laurie Lile	Laurie	Director
City of Palmdale	Planning	Carrillo	Juan	Assistant Planner
City of Lancaster	Planning Commissioner	Macpherson	Bruce	Commissioner
City of Lancaster	Community Development	Ludicke	Brian	Director
City of Lancaster		La Sala	Robert	City Manager
City of Lancaster	Planning	Swain	Jocelyn	Associate Planner
Green Valley County Water District		Vernitti	Laura	
Lancaster Cemetery District		Little	Barbara	
Newhall County Water District		Russell	Karin J.	
Quartz Hill Water District		Reed	Chad	
West Valley County Water District		Jimenez	Sharon	
Antelope Valley Resource Conservation District		Rodrigues	Steve	Director
Newhall Ranch High country Recreation and Conservation Authority		Hensley	Larry	
Los Angeles World Airports		Day	Kim	
Los Angeles City-County Native American Indian Commission		Andrade	Ron	
Antelope Valley Healthcare District		Wong	Les	
Antelope Valley Mosquito and Vector Control District		Kratz	Cei	
Antelope Valley-East Kern Water Agency		Fuller	Russel E.	
Castaic Lake Water Agency		Ward	Marcia	

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7.5.1 ELECTED OFFICIAL CONTACTS

The elected officials listed below were sent a certified copy of the NOP for review and comment. LADWP's Legislative Affairs group also sent out letters to elected officials within the Project area, prior to the mailings of the NOP and Newsletters, to serve as an additional advance notification for the forthcoming NOP, Newsletters and Scoping Meetings. The letters also offered personal meetings with each representative, if they desired.

During the scoping period, LADWP's Legislative Affairs group also sent letters to Town Councils within the Project area offering personal meetings with each group or representative. Four Town Councils requested briefings, and LADWP representatives attended the meetings. In March 2009, LADWP's Legislative Affairs group sent update letters to the 28 Town Councils, homeowners associations, City Agencies, and other groups listed below offering to provide updates on the BRRTP at their regular standing meetings.

TABLE 7-8. ELECTED OFFICIAL CONTACTS

Organization	First Name	Last Name	Title
U.S. House of Representatives	Howard “Buck“	McKeon	Congressman
U.S. House of Representatives	Kevin	McCarthy	Congressman
U.S. House of Representatives, District 22	Bill	Thomas	
United States Senate	Dianne	Feinstein	Senator
California Assembly	Sharon	Runner	Assemblyperson
California Assembly	Cameron	Smyth	Assemblyperson
California Assembly	Audra	Strickland	Assemblyperson
California State Senate	George	Runner	
Los Angeles County Supervisor	David	Antonovich	
City of California City	David	Evans	Mayor
City of Santa Clarita	Bob	Kellar	Mayor
Mayor Pro Tem City Of Ridgecrest	Steven	Morgan	
Acton Town Council	Michael	Hughes	President
Agua Dulce Town Council	Don	Henry	President
Antelope Acres Town Council	Vicki	Nelson	President
Association of Rural Town Councils	Wayne	Argo	
Castaic Area Town Council	Robert	Kelly	President
Green Valley Town Council	Dale	Kimmel	President
Juniper Hills Town Council	Vance	Pomeroy	President
Lake Los Angeles Town Council	Scott	Lezak	President
Lakes Town Council	James	Walker	President
Leona Valley Town Council	Suzy	Love	President
Littlerock Town Council	Jude	Aoun	President
Littlerock Town Council	Bill	Guild	President
Mojave Town Council	Bill	Dever	President
Quartz Hill Town Council	Loretta	Berry	President
Quartz Hill Town Council	Randy	Wolfe	President
Roosevelt Town Council	Barbara	Firsick	President
Sun Village Town Council	James	Brooks	President
Three Points/Liebre Mountain Town Council	Larry L.	Myers	President
West Ranch Town Council	Ron	Mechsner	President

LADWP, with assistance from USFS and BLM, attended the following town council meetings listed in Table 7-9 below.

TABLE 7-9. TOWN COUNCIL MEETINGS

Association of Rural Town Councils	June 26, 2008
Leona Valley Town Council	July 14, 2008 May 11, 2009
Canyon Country Advisory Committee	May 20, 2009
West Ranch Town Council	June 3, 2009
Lakes Town Council	July 12, 2008 June 6, 2009
Green Valley Town Council	June 10, 2009 May 12, 2010 August 11, 2010
Quartz Hill Town Council	June 16, 2009
Antelope Acres Town Council	June 18, 2008 June 17, 2009

7.6 FORMAL CONSULTATION

7.6.1 BIOLOGICAL RESOURCES

Section 7(a)(2) of the federal Endangered Species Act (ESA), 16 USC 1536(a)(2), requires every federal agency, in consultation with and with the assistance of the Secretary of the Interior, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. A federal agency will use a Biological Assessment (BA) to determine whether formal consultation is required.

A BA was prepared to address the ESA and California State Endangered Species Act and the California Natural Community Conservation Planning Act (NCCPA) consultation requirements of federal and State agencies. In accordance with the BA requirements, the document focuses on issues specific to the Federal Agency Preferred Alternative (the Proposed Action). The BA is included as Appendix H to this Final EIS/EIR.

In April 2008, a letter was sent to the USFWS requesting lists of all species that are listed, proposed, or candidates for listing as threatened or endangered under the ESA that could occur within the Project area. The USFWS provided a list of species fulfilling the requirements under Section 7(c) of the ESA. In compliance with 50 CFR Part 402 regulations, federal agencies must review their actions and determine whether the action may affect federally listed species or designated critical habitat (50 CFR 402.14; 50 CFR 402.10).

USFS, BLM, and USFWS conducted a number of in-person meetings (some members attended via conference call) to discuss the requirements of the Section 7 Consultation, the Biological Assessment, biological surveys, the Biological Resources Technical Report, and the schedule.

7.6.2 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological, and cultural resources, and to consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) concerning potential effects of federal actions on historic properties. Before federal funds are approved for a particular project or prior to the issuance of any license, the effect of the project on any district, site, building, structure, or object that is listed in or eligible for listing in the National Register must be evaluated.

In accordance with federal regulations implementing the NHPA (36 CFR Part 800), the USFS sent a letter to the SHPO on February 5, 2009, requesting consultation for the BRRTP. The letter also requested concurrence with a determination of the area of potential effects (APE) as defined at 36 CFR 800.16(d).

The ANF, BLM, and California SHPO have prepared a Programmatic Agreement (PA) for BRRTP that identifies procedures for identifying historical, archaeological, and cultural resources; evaluating their eligibility to the National Register; assessing effects; and implementing measures to avoid or mitigate adverse effects. On August 4, 2009, the ANF inquired about the ACHP's willingness to participate in the PA per 36 CFR 800.6(a)(1)(iii). In a letter dated September 23, 2009, the ACHP elected not to participate in development of the PA. The Final PA is included as Appendix O to this Final EIS/EIR.

Tribal Consultation

Various federal statutes and regulations, including NEPA and the NHPA, require that agencies consult with American Indians. Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, was issued in 2000 in order to establish regular and meaningful consultation and collaboration with Tribal officials in the development of federal policies that have Tribal implications, to strengthen the United States government-to-government relationships with Indian Tribes, and to reduce the imposition of unfunded mandates upon Indian Tribes.

Regulations for Section 106 require that federal agencies identify potentially affected Indian Tribes that might have knowledge of sites of religious and cultural significance in the APE (36 CFR 800.3(f)(2)). If any such properties exist, the regulations require that federal agencies invite Indian Tribes to participate in the Section 106 process as consulting parties. For BRRTP, the USFS is responsible for Section 106 consultation with Native American Tribes.

In spring 2008, the CEQA Notice of Preparation (NOP) for BRRTP was sent to 12 Native American Tribes, and comments from two Tribes were received during the scoping process for the Draft EIS/EIR (see Sections 7.2.2 and 7.2.5). These were the Seven Feathers Corporation/San Fernando Band of Mission Indians and the Tribal Elders Council of the Santa Ynez Band of Mission Indians. In addition, a list of Tribes and Most Likely Descendents (MLDs) was received from the California Native American Heritage Commission (NAHC) in June 2008.

As required by the NHPA (36 CFR 800.2(c)(2); 36 CFR 800.3(f)(2); 36 CFR 800.14(b)(2); and 36 CFR 800.14(f)), the USFS has consulted the federally recognized San Manuel Band of Mission Indians, Morongo Band of Mission Indians, and Santa Ynez Band of Mission Indians/Tribal Elders Council, as well as the Gabrieliño Group, Seven Feathers Corp/San Fernando Band of Mission Indians, Owl Clan Consultants and other interested parties (per 36 CFR 800.2(c)(5)).

Several Tribes responded to initial consultation letters sent by the USFS describing the proposed Project and requesting Tribal participation in the development of the PA. Concerns raised by federally recognized Tribes and non-recognized Native American groups and individuals included:

- On May 12, 2008, the Seven Feathers Corporation/San Fernando Band of Mission Indians provided information regarding the availability of monitors during the construction phase of the Project. Additional concerns were expressed in October 2008.
- On June 9, 2008, the Morongo Band of Mission Indians commented to the ANF on aspects of the Project and requested updates as the project moves forward.
- On June 3, 2009, The Santa Ynez Band of Mission Indians/Tribal Elders Council requested that they be informed of the undertaking and to suggest that a Native American monitor be present during ground disturbing activities. Once it was confirmed that local Tribes had been contacted regarding BRRTP, the Santa Ynez Band asked to be removed from further consultation.
- On June 30, 2009, the Owl Clan Consultants expressed concern about the Project and requested updates for the duration of the Project.
- The Chairperson of the San Manuel Band of Mission Indians was contacted on September 24, 2009. To date, he has not responded. However, several other Tribal representatives expressed interest in the Project or requested the presence of a Native American representative during construction monitoring.
- On September 30, 2009, a representative of the Gabrieliño Group expressed interest in the Project and requested updates as the Project moved forward.
- On November 4, 2011, a letter was received from the Agua Caliente Band of Cahuilla Indians stating that they had no concerns regarding the Project.

In addition to the consultation letters sent by the ANF, the agency's Tribal Liaison also held a meeting on April 18, 2009, for all members of local Native American Tribes to discuss a variety of issues, including BRRTP. In April 2012, the draft PA was submitted for formal review by SHPO staff. At the same time it was submitted to the SHPO, the draft PA was provided to participating Tribes, Native American contacts listed by the NAHC, and other interested Native American organizations, groups, and individuals for comment.

7.7 OTHER COORDINATION EFFORTS

7.7.1 ELECTRICAL TRANSMISSION LINES CONSISTENCY MEETINGS

A number of transmission line projects were proposed on the Angeles National Forest. The USFS requested that CPUC, LADWP, SCE, and any additional utility companies conduct working group meetings to evaluate environmental and application processing consistency among proposed transmission line projects crossing National Forest System lands. The consistency meetings were held on April 16, 2008, and May 13, 2009, and USFS distributed agendas, facilitated the meetings, and communicated with utility companies and their consultants.

7.8 PUBLIC REVIEW OF DRAFT EIS/EIR

7.8.1 NOTICE OF COMPLETION

Per CEQA Guidelines Section 15085, the Notice of Completion (NOC) was filed with the State Clearinghouse, Office of Planning and Research as soon as the Draft EIR was completed. LADWP also provided public notice of availability of the Draft EIR at the same time it sent the NOC to the State Clearinghouse (CEQA Guidelines Section 15087). In addition to the information disclosed in the NOC, the notice of availability also included details for the scheduled public meetings (dates, times, and places); a list of significant environmental effects; and whether the Project site is listed under Section 65962.5 of the Government Code (hazardous waste facilities).

7.8.2 NOTICE OF AVAILABILITY

In compliance with NEPA (40 CFR 1506.6(b)(2)), a Notice of Availability (NOA) of the Draft EIS/EIR was published on August 26, 2011, in the Federal Register, thus beginning the public comment period.

7.8.3 PUBLIC REVIEW

In accordance with CEQA and NEPA requirements, the Draft EIS/EIR was circulated for public and agency review and comment for a 60-day period following the publication of the NOA of the Draft EIS/EIR by the EPA and filing of the NOC with the California State Clearinghouse. During the review period, five public meetings were held in the unincorporated communities of Mojave, Lake Hughes, Leona Valley, and Agua Dulce and the City of Santa Clarita to receive public input on the Draft EIS/EIR.

Comments received at the meetings are addressed in this Final EIS/EIR in Appendix R. Comments were accepted at the public meetings, on the Project phone line, by fax, email, interactive GIS website, and by writing to the BRRTP Project Team.

Draft EIS/EIR Notification

The Project mailing list contains 8,057 entries and includes agencies, elected officials, Native American Tribes, property owners within 500 feet of the Proposed Action and Alternative routes, and interested individuals and organizations. Everyone on the mailing list was sent a copy of the NOA notifying them of the availability of the Draft EIS/EIR, and dates, times, and locations of the public meetings. The NOA was also emailed to the 630 addresses on the BRRTP email mailing list comprising individuals who requested to be added to this list. The Project website was updated with an electronic copy of the document and appendices. Newspaper advertisements also announced the availability of the Draft EIS/EIR.

Document Repository Sites

Both NEPA (40 CFR 1506.6(f)) and CEQA Guidelines (Section 15087(c)(5) and Section 15087(g)) require lead agencies to make project documents available to the public for review. NEPA and CEQA documents prepared as part of the BRRTP, which include the Draft EIS/EIR and appendices, were made available at the public repository sites listed in Table 7-11 and on the Project website (http://www.ladwp.com/barrenridge).

TABLE 7-11. DOCUMENT REPOSITORY SITES

Repository Site	Address
Los Angeles Department of Water and Power	111 N. Hope Street, Room 1044, Los Angeles, CA 90012
Angeles National Forest, Supervisor's Office	701 N. Santa Anita Ave., Arcadia, CA 91006
BLM, Ridgecrest Field Office	300 S. Richmond Road, Ridgecrest, CA 93555
Mojave Public Library	16916 State Highway 14 # D2, Mojave, CA 93501
Quartz Hill Library	42018 N. 50th St. W., Quartz Hill, CA 93536
Palmdale City Library	700 East Palmdale Blvd., Palmdale, CA 93550
Valencia Library	23743 W. Valencia Blvd., Santa Clarita, CA 91355
Acton-Agua Dulce Library	33792 Crown Valley Rd. Acton, CA 93510
Tehachapi Branch	1001 West Tehachapi Blvd., Suite A-400 Tehachapi, CA 93561

7.8.4 DRAFT EIS/EIR DISTRIBUTION LIST

The distribution list for copies of the Draft EIS/EIR can be found at http://www.ladwp.com/barrenridge. The distribution list for copies of this Final EIS/EIR is found in Appendix P of this Final EIS/EIR.

7.8.5 COMMENTS RECEIVED ON THE DRAFT EIS/EIR

The sixty-day formal public review period for the Draft EIS/EIR extended from August 26, 2011, to October 25, 2011. Opportunities to submit comments during the review period were provided via mail, Project email, web-based GIS portal, Project phone hotline, and through a series of five public meetings conducted throughout the Project area. Comments were received from agencies, Tribes, organizations, and individuals via all comment modes provided. Four late comment letters and one email were received from agencies and a Tribe during the three weeks following the close of the public review period; these sets of comments have been considered and are included in the comment totals. Additional comments from individuals and organizations received after the close of the public review period were treated as normal correspondence outside of the NEPA and CEQA processes and responded to as appropriate; they are not included in comment totals. See Table 7-12 for a summary of the sources, modes, and totals of sets of comments received. Duplicated sets of comments, i.e., identical sets of comments sent from a single source multiple times, were only counted once.

TABLE 7-12. SOURCES, MODES, AND TOTALS OF DRAFT EIS/EIR COMMENTS

Comment Source	Submission Mode	Submission Count	Submission Total
Public Meetings			30
	GIS Station	21	
	Informal Oral	7	
	Comment Form	2	

Comment Source	Submission Mode	Submission Count	Submission Total
Agencies, Tribes, and Organizations*			**31**
	Letter	26	
	Project Email	5	
Individuals**			**57**
	Letter	50	
	Project Email	1	
	Project Hotline	5	
	Comment Form (mailed)	1	
		Combined Total	**118**

*Five agencies emailed copies of their comment letters: Los Angeles Area Chamber of Commerce, Agua Dulce Town Council, California Department of Water Resources, County of Los Angeles Department of Parks and Recreation, and South Coast Air Quality Management District.

** One individual emailed a copy of their comment letter: Wright, G. & M.

Comments Received at Public Meetings

LADWP conducted five public meetings from September 20 through September 29, 2011, during the review period for the Draft EIS/EIR to inform the public about the Draft EIS/EIR document and solicit comments. See Table 7-13 for dates, locations and attendance at the meetings. All meetings were conducted in an "open house" format to allow participants to attend any time between 5:30 p.m. and 8:30 p.m. A brief video presentation was shown by the Project team at 7 p.m., followed by a general question and answer session. Two GIS comment stations staffed by GIS technicians were available at each meeting for individuals to review maps of the Project area and provide site specific comments.

TABLE 7-13. PUBLIC MEETINGS DURING THE REVIEW OF THE DRAFT EIS/EIR

Date	Location	Number of people signed in
Tuesday, September 20, 2011	Hughes-Elizabeth Lakes Union School 16633 Elizabeth Lake Road Lake Hughes, CA 93532	21
Wednesday, September 21, 2011	Mojave Veterans Building 15580 O Street Mojave, CA 93501	9
Tuesday, September 27, 2011	Agua Dulce Elementary School 11311 W. Frascati Street Agua Dulce, CA 91390	6
Wednesday, September 28, 2011	Santa Clarita Activity Center 20880 Centre Pointe Parkway Santa Clarita, CA 91350	9
Thursday, September 29, 2011	Leona Valley Elementary 9063 West Leona Avenue Leona Valley, CA 93551	29
	Totals	**74**

Notification

Newsletters

Public meeting locations, dates, and times were included in the NOA, which was distributed in August 2011 to everyone on the BRRTP mailing list and email mailing list. These mailing lists included agency representatives, elected officials, Native American Tribes, interested individuals, parties and organizations, and property owners within 500 feet of both sides of the Proposed Action and Alternatives.

Newspaper Advertisements

The NOA was published in thirteen local newspapers. A Spanish translation of the advertisement was published in La Opinion newspaper. See Table 7-14 for a complete list of all publications.

TABLE 7-14. NEWSPAPERS UTILIZED FOR ADVERTISEMENT OF THE NOA AND PUBLIC MEETINGS.

Newspaper	Area Covered	Publication Date
Los Angeles Times	Los Angeles communities	8/12/11, 9/5/11
Antelope Valley Press	Antelope Valley	8/12/11, 9/5/11
The Signal	Santa Clarita	8/12/11, 9/5/11
Agua Dulce/Acton Country Journal	Agua Dulce/Acton	8/13/11, 9/3/11
Mojave Desert News	California City	8/25/11, 9/8/11
Ridgecrest Daily Independent	Mojave to Olancha	8/18/11, 9/8/11
News Review	Ridgecrest, China Lake and Inyokern	8/17/11, 9/7/11
La Opinion	Los Angeles communities	8/15/11, 9/5/11
Mountain Yodeler	Elizabeth Lake, Green Valley, Leona Valley	9/1/11
Cherry Chapters: the Leona Valley Newsletter	Leona Valley	9/9/11
Acton/Agua Dulce News	Acton/Agua Dulce area	8/22/11, 9/5/11
Rosamond News	Rosamond/Kern County Area	8/22/11, 9/5/11
Lake Los Angeles News	Lake Los Angeles Area	8/22/11, 9/5/11

Other Notification

LADWP also updated the Project website (http://www.ladwp.com/barrenridge) and toll-free Project hotline with the public meeting information.

Comments

A total of 33 sets of comments were received at the public meetings through GIS stations, informal oral comments during the question and answer session, and comment forms. See Table 7-15 for a list of individual commenters. Copies of each substantive comment and the response from the lead agencies is provided in Appendix R, Section 1. A summary of issues raised in the comments received is provided in Section 7.8.6 below.

TABLE 7-15. COMMENTS RECEIVED AT THE PUBLIC MEETINGS

Commenter	Submission Mode
Lake Hughes	
Ajax, D.	GIS (2 comments)
Charlton, J.	Comment Form
Kevwhich, C.	Comment Form
Kimmel, D.	GIS
Palmer, F.	GIS
Troupe, P.	GIS
Mojave	
Brewer-Anderson, A.	Informal Oral
Edgeworth, J.	GIS and Informal Oral
Agua Dulce	
Godde, J.	GIS (2 comments)
Johnson, M.	Informal Oral
Smith, L.	Informal Oral
Santa Clarita	
Bloch, H.	GIS
Finetti, A.	GIS and Informal Oral
Leona Valley	
Benoit, A.	Informal Oral
Brownfield, R.	GIS
Dahl, D. and K.	GIS
Elliot, W.	GIS and Informal Oral
Finetti	Informal Oral
Fuller, P.	GIS
Green, R. and D.	GIS
Griggs, D. and C.	GIS (2 comments)
Kennedy	Informal Oral
Kimmel, D.	GIS
Pearcy	Informal Oral
Reitano, R.	Informal Oral
Upton-Knittle, A. and L.	GIS (2 comments)
Wright, G. and M.	GIS

Comments Received from Agencies, Tribes and Organizations

A total of 26 sets of comments were received from agencies, Tribes, and organizations on the Draft EIS/EIR. Four of the sets of comments were received after the close of the formal public review period:

- California Department of Fish and Game letter on October 27, 2011;
- State Water Resources Control Board letter on October 31, 2011;
- California Department of Water Resources letter on November 7, 2011; and
- Agua Caliente Band of Cahuilla Indians letter on November 7, 2011.

See Table 7-16 for a complete list of agencies that submitted comments on the Draft EIS/EIR. Copies of each substantive comment and the response from the lead agencies is provided in Appendix R, Section 2. A summary of issues raised in the comments received is provided in Section 7.8.6 below.

TABLE 7-16. COMMENTS RECEIVED FROM AGENCIES, TRIBES AND ORGANIZATIONS

Commenter	Submission Mode
Agua Caliente Band of Cahuilla Indians	Letter
Agua Dulce Town Council	Letter
Antelope Valley Air Quality Management District	Letter
California Department of Fish and Game	Letter
California Department of Water Resources	3 Letters
California State Water Resources Control Board	Letter
Center for Biological Diversity	Letter
City of Palmdale	Letter
County of Kern, Roads Department	Letter
County of Los Angeles, Department of Parks and Recreation	Letter
County of Los Angeles, Department of Regional Planning	Letter
County of Los Angeles, Fire Department	Letter
Desert and Mountain Conservation Authority	Letter
Green Valley Town Council	2 Letters
Leona Valley Town Council	2 Letter
Los Angeles Area Chamber of Commerce	Letter
Metropolitan Water District of Southern California	Letter
Native American Heritage Commission	Letter
South Coast Air Quality Management District	Letter
Southern California Edison	Letter
United States Environmental Protection Agency	Letter
United States Office of Environmental Policy and Compliance	Letter

Four agencies sent five Project-related inquiries to the Project email during the public review period that were responded to by email: City of Santa Clarita, Metropolitan Water District of Southern California, LA County Fire Department, and Leona Valley Town Council (two emails). These emails did not contain substantive comments on the Draft EIS/EIR and are not included.

Comments Received from Individuals

A total of 57 sets of comments were received from individuals on the Draft EIS/EIR. See Table 7-17 for a complete list of individuals who submitted comments on the Draft EIS/EIR. Copies of each substantive comment and the response from the lead agencies is provided in Appendix R, Section 3. A summary of issues raised in the comments received is provided in Section 7.8.6 below.

TABLE 7-17. COMMENTS RECEIVED FROM INDIVIDUALS

Commenter	Submission Mode	Commenter	Submission Mode
Ajax, D.	Letter	Klegman, D.	Letter
Ambrose, N.	Letter	Lawrence, C.	Project Hotline
Anderson, K.	Letter	Lye, J. R.	Letter
Bale, L.	Letter	Matthews, S.	Letter
Ball, W.	Letter	McConnell, B.L.	Letter
Beeler, J.	Letter	McConnell, G.	Letter
Beeler, J.	Letter	McCracken, M.	Letter
Bistline, A.	Letter	Millard, D.	Letter
Bistline, F.	Letter	Miller, W. B.	Letter
Block, H.	Project Hotline	Mobin, H.	Project Hotline
Brar, S.	Letter	Monedleman, M.	Project Hotline

Commenter	Submission Mode
Brownfield, B.	Letter
Brownfield, R.	Letter
C, D.	Letter
Case, R. B.	Letter
Clark, J.	Letter
Cremeans, C.	Letter
Cremeans, G.	Letter
Gallagher, M. D.	Letter
Giron, L.	Letter
Given, R.	Letter
Goetschel, L.	Letter
Hatton, J.	Letter
Irwin, S.	Letter
Jacques, D.	Letter
Johnson, M.	Letter
Kimmel, D.	Letter
Kimmel, J.	Letter
Mooradian, W.	Project Hotline
Palmer, F.	Comment Form
Piper, T.	Letter
Randles, G.	Letter
Rapella, B.	Letter
Robertson, A.	Letter
Steele, M. J.	Letter
Tilch, J	2 letters
Trowell, C.	Letter
Tuszynski, J.	Email
Waidner, B. and P.	2 letters
Ward, J.	Letter
Wong, J.	Letter
Wong, P.	Letter
Wright G.	Letter
Wright G. and M	Letter

Seven individuals sent eight Project-related inquiries to the Project email during the public review period that were responded to by email: JG; Flores, J.; Dahl, D. (two emails); Randall, J.; Mazziotti, P.; Bloch, H.; and Johnson, M. These emails did not contain substantive comments on the Draft EIS/EIR and are not included.

7.8.6 ISSUES RAISED IN COMMENTS RECEIVED ON THE DRAFT EIS/EIR

This section contains a summary of the issues raised by commenters on the Draft EIS/EIR during the formal public review period and through November 2011. Please refer to Appendix R for a complete set of all substantive comments received and their responses by the lead agencies. As noted in individual responses, the Final EIS/EIR has been revised where appropriate in response to comments received. All changes made to the text of the Draft EIS/EIR are documented in Chapter 12, Changes Between the Draft and the Final EIS/EIR, of this Final EIS/EIR.

Project Need and Objectives

Commenters suggested that a discussion detailing energy conservation and generation capacity within LADWP's service area is necessary to show that capacity has been exhausted. Inter-agency coordination was recommended to ensure renewable energy projects connect to the proposed Project to ensure purpose and need are met. It was also suggested that application processes for connection permits are discussed in the Final EIS/EIR. Other comments stated that the lead agencies' purpose and need were too narrowly drawn to the proposed Project.

Alternatives

Alternative technologies, such as distributed generation, were suggested. Undergrounding was another alternative option suggested. The utilization of tubular steel poles was recommended for the entire length of the Project or, at the very minimum, for natural settings near recreation areas and residences in close proximity to the Project.

Project alternatives not impacting habitat outside of Desert Wildlife Management Areas were favored. Approaches to substantially reduce the width of the additional ROW, and evaluate associated environmental impacts, were recommended. Concerns were raised about impacts to biology and aquatic resources, and impacts to community of Agua Dulce for Alternatives 2 and 3, respectively.

Human Environment Issues

Air Quality

Concerns were raised about the impacts associated with global climate change, dust control, and health effects of air emissions to sensitive receptors; additional mitigation strategies were recommended. In addition to the production of a Construction Emissions Mitigation Plan, revisions to mitigation measures were recommended to address issues such as significant regional and cumulative air quality impacts and the supplemental use of watering trucks for potential fire-fighting purposes at any given time. Advance notification to sensitive receptors of potential emission health risks and any exposure avoidance measures they should consider during construction was recommended. It was also recommended that estimates of direct and indirect emissions attributed to the Proposed Action, for general conformity purposes, be consistent with the definitions in 40 CFR 93.152.

Cultural Resources

Full documentation of cultural resource concerns raised by Tribes, along with tribal coordination regarding the Programmatic Agreement, was recommended. Concerns were raised regarding human remains found during a separate nearby project and the potential for similar discoveries for the proposed Project. Specifics as to how to avoid adversely affecting the integrity, accessibility, or use of sacred sites, if they exist, was suggested.

EMF

Many residents and property owners were concerned with the health effects associated with EMF impacts from the transmission lines on all Project alternatives. Concerns about animal health impacts were also prevalent.

Fire Safety

The Project is located within a Very High Fire Hazard Severity Zone, and fire risk from the potential creation of transmission line-bounded islands and subsequent risk to vicinity homes and residents was a concern. Suggestions, such as placing the new and existing transmission lines along the lower mountain ridge of the forest and the undergrounding of proposed switching station fuel storage tanks, were made.

It was recommended that all biological mitigation measures, as appropriate, be implemented during any fire prevention activities. Suggestions for mitigation measure modification included the supplemental use of watering trucks for firefighting purposes, the termination of construction when a Red Flag Alert is declared by the Los Angeles County Fire Department, and the installation of a camera security system to monitor for hazards.

Land Use/Recreation

Numerous property owners were concerned with the acquisition of private property, eminent domain, and the expansion of transmission line ROW and easements. Other concerns relating to eminent domain were raised, including anticipated future housing market values, relocation expenses, and potential loss of business "goodwill."

A general concern was raised over BLM and USFS's ability to protect and manage public lands given what appears to be an inadequate inventory of resources and environmental review. The appropriateness of industrial-scale projects within the California Desert Conservation Area was questioned. Concerns were also raised regarding impacts to the Ritter Ranch and City Ranch Specific Plans, recreational equestrian properties, Castaic Lake State Recreation Area, and Pyramid and Castaic Lakes.

Noise

Concerns were raised about corona noise from the new transmission line and the number of sensitive receptors, mainly residences, within 1,000 feet of the Alternative 3 alignment. Mitigation measure modifications were suggested, including avoidance of construction activities during the peak springtime viewing season and revising mitigation to include the reduction or screening of mobile equipment noise.

Property Values

Numerous property owners are concerned that property values would decrease with additional transmission lines. It was also recommended that an inventory of all public lands and their resource(s) and other values be compiled.

Public Health and Safety

Residents are concerned about the possible impacts to public health and the environment. Concerns were raised over vandalism and the potential for homeland security threats for the proposed Project. In addition, concerns of safety hazards, such as changes in air traffic patterns, were raised regarding portions of the Project in the vicinity of Agua Dulce Airport. Concerns over impacts to other airports, Mojave Airport, and Edwards Air Force Base were also raised.

Public Services and Utilities

Numerous suggestions were made for the relocation of the transmission line to lower mountain ridges for more efficient emergency and scheduled maintenance access, and agency coordination for the over- or under-crossing of transmission lines with the Project. Other concerns were raised such as impacts to the Foothill Feeder Pipeline, the closure of Leona Valley School due to reduced student population if residences are lost, the potential adverse impacts on the Control-Inyo SCE-LADWP system tie, and the storage and disposal of construction spoils.

Socioeconomics and Environmental Justice

Concerns were raised over potential industries and income-generating uses, such as film backdrop locations, and potential health effects; such impacts could unfairly affect existing minority communities and lower income communities in the vicinity of the Project, commenters stated. Economic resources were also of concern for communities reviewing the Project, and review cost reimbursement was suggested. A dedication of funds to train a local workforce was also suggested. Some concerns were also raised about the cost of the Project being passed on to the customer.

Traffic

Increased traffic, potential road damage from Project-related activities, impacts to Off Highway Vehicles, and construction traffic conflicts with neighboring projects were of concern.

Visual Resources

Concerns raised included the obstruction of landscape and mountain views by the new transmission lines and the potential violation of community lighting zones by tower aviation lights and off-site construction illumination.

Natural Environment Issues

Biological Resources

Significant concerns were raised regarding the potential direct, indirect, and cumulative impacts to rare, threatened, endangered, and special-status species and habitats. A number of clarifications to biology mitigation measures were suggested, including providing for conservation easement protection of additional land along ROW located outside the ANF.

Cumulative Impacts

There were many concerns about the cumulative impacts of other projects in the Project area including multiple renewable energy projects, substations, and additional transmission lines. There were also specific concerns about potential sprawl development in the area and the undermining of planning in renewable energy industrial zones. It was suggested that future projects in LADWP's queue, and those solicitations not yet in the queue, be considered under cumulative impacts. There is concern of "piecemealing" the Project from other proposed renewable energy projects in LADWP's queue. Concerns were also raised regarding future disturbance if and when LADWP upgrades its system or constructs a similar project.

Earth Resources

Commenters were concerned about Alternative 3 being located on the San Andreas Fault.

Hydrology and Water Quality

Concerns were raised regarding impacts from construction spoils. Impacts to groundwater supplies and groundwater recharge; Pyramid Lake and Castaic Lake; stream crossings; and ephemeral washes, flood flows, and hydrologic connectivity were also of concern. A jurisdictional delineation of the Clean Water Act jurisdictional waters, including wetlands and other special aquatic sites, that could be filled by Project activities was recommended, along with appropriate consultation. An analysis of how the Project would impact the beneficial uses applicable for each water body was also suggested. Subsequently, identification of the Least Environmentally Damaging Practicable Alternative was suggested.

Other Comments

There were growth-inducing concerns that construction of a transmission line could drive industrial energy development into remote locations such as the Mojave Desert. In addition, there was a request for an extension of the Draft EIS/EIR public comment period. Concern was also raised over the fact that all of the resource impact categories were weighted evenly; the sentiment was that resource categories impacting people, as opposed to environmental resources, should be more important.

7.9 ADDITIONAL STEPS IN THE ENVIRONMENTAL REVIEW

USFS, BLM, and LADWP will use the Final EIS/EIR when considering approval of the Proposed Action or an Alternative. If the Proposed Action or an Alternative is approved, LADWP will accept CEQA findings and issue a Notice of Determination (NOD), and USFS and BLM will issue a Record of Decision (ROD) to document that decision.

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CHAPTER 9: REFERENCES

BLM (U.S. Department of the Interior, Bureau of Land Management). 1999. *California Desert Conservation Area Plan*. [online] http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf

BLM (U.S. Department of the Interior, Bureau of Land Management). 2005. California Desert District. *Final Environmental Impact Report and Statement for the West Mojave Plan*. [online] http://www.blm.gov/ca/pdfs/cdd_pdfs/wemo_pdfs/plan/wemo/Vol-1-Chapter1_Bookmarks.pdf

BLM (U.S. Department of the Interior, Bureau of Land Management). 2006. *West Mojave Plan Amendment to the California Desert Conservation Area Record of Decision*. [online] http://www.blm.gov/pgdata/etc/medialib//blm/ca/pdf/pdfs/cdd_pdfs/wemo_pdfs.Par.4dfb777f.File.pdf/wemo_rod_3-06.pdf

BLM (U.S. Department of the Interior, Bureau of Land Management). 2008. *National Environmental Policy Act: Handbook H-1790-1*.

BLM (U.S. Department of the Interior, Bureau of Land Management). *Renewable Energy*. [online] http://www.blm.gov/ca/st/en/fo/cdd/alternative_energy.html. Accessed 07/18/11.

BLM (U.S. Department of the Interior, Bureau of Land Management). Harris, Glenn (Natural Resources Specialist). Personal communication with POWER Engineers, Inc. March 23, 2010.

Boyles, Steven R. Discussion of Green Valley Alternatives, rev(1). LADWP Overhead Transmission Engineering Group. October 17, 2011.

California High Speed Rail Authority. [online] http://www.cahighspeedrail.ca.gov/

California Public Utilities Commission (CPUC). Current Projects. [online] http://www.cpuc.ca.gov/PUC/energy/Environment/Current+Projects/. Accessed November 11, 2010.

California Public Utilities Commission and United States Department of Agriculture, Forest Service (CPUC and USFS). 2010. Southern California Edison's Tehachapi Renewable Transmission Project Final EIS. September 14, 2010.

Cemex. [online] http://www.cemexusa.com/ac/ac_mc_pr.html. Accessed 11/11/10.

Centennial, California. [online] http://centennialca.com/index.html. Accessed 11/11/10.

CEQ (Council on Environmental Quality). 2001. *Regulations for Implementing NEPA*.

CPUC (California Public Utilities Commission), USFS. 2007. *Southern California Edison's Antelope-Pardee 500-kV Transmission Line Project Final Environmental Impact Report/Environmental Impact Statement*. Prepared by Aspen Environmental Group. January 2007.

CPUC (California Public Utilities Commission), USFS. 2009. *Southern California Edison's Tehachapi Renewable Transmission Project Final Environmental Impact Statement*. Prepared by Aspen Environmental Group. September 2010.

EPA (U.S. Environmental Protection Agency). 2009. *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act.* Federal Register 74(78) 18886-18910.

______. 2010. *Clean Air Act Permitting for Greenhouse Gas Emissions - Final Rules, Fact Sheet.* Dec. 2010. [online] http://www.epa.gov/nsr/ghgdocs/20101223factsheet.pdf.

First Solar, Inc. AV Solar Ranch One. [online] http://www.firstsolar.com/communities/antelopevalley/. Accessed 11/11/10.

Kern County. Environmental Documents. [online] http://www.co.kern.ca.us/planning/eirs.asp

LADWP (City of Los Angeles Department of Water and Power). 2006. Retail Sales and Demand Forecast.

LADWP (City of Los Angeles Department of Water and Power). 2007. Power System Integrated Resource Plan.

LADWP (City of Los Angeles Department of Water and Power). 2008. Carbon Dioxide Emissions.

LADWP (City of Los Angeles Department of Water and Power). 2009. 2009 Power Content Label. [online] http://www.ladwp.com/ladwp/cms/ladwp000536.jsp

LADWP (City of Los Angeles Department of Water and Power). 2010. Power System Integrated Resource Plan. [online] http://www.lapowerplan.org/

LADWP, Parker, Nadia (Environmental Specialist). Personal communication with POWER Engineers, Inc., September 1, 2009.

Los Angeles County Fire Department. 2011. Osby, Daryl L. (Fire Chief). Letter to Green Valley Town Council, Dale Kimmel and Alesia Robertson. June 12, 2011.

National Wildfire Coordinating Group (NWCG). 2010. Incident Response Pocket Guide. PMS #461, NFES #1077. Boise, ID: National Interagency Fire Center.

POWER Engineers, Inc. (POWER). 2012a. BRRTP Steering Committee. Meeting minutes. January 4, 2012.

POWER Engineers, Inc. (POWER). 2012b. Green Valley 20120307.kmz. March 7, 2012.

POWER Engineers, Inc. (POWER). 2012c. BRRTP Green Valley Relocation Alternative Fire Discussion. Meeting minutes. January 13, 2012.

POWER Engineers, Inc. (POWER). 2012d. BRRTP Green Valley Relocation Alternative Fire Discussion. Meeting minutes. February 12, 2012.

RETI Coordinating Committee. 2010. *Renewable Energy Transmission Initiative.*

U.S. Department of the Interior, Bureau of Reclamation. Mid-Pacific Region. [online] http://www.usbr.gov/mp/nepa/nepa_base.cfm?location=sccao. Accessed 11/11/10.

USFS (U.S. Department of Agriculture, Forest Service). 1997. *Forest Service Manual 2300*. August.

USFS (U.S. Department of Agriculture, Forest Service). 2005. *Angeles National Forest Land Management Plan*. [online] http://www.fs.fed.us/r5/angeles/projects/ForestPlan.shtml

USFS (U.S. Department of Agriculture, Forest Service). 2005. Land Management Plan, Part 1: Southern California National Forests Vision. [online] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166876.pdf

USFS (U.S. Department of Agriculture, Forest Service). 2005. Land Management Plan, Part 2: Angeles National Forest Strategy. [online] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166877.pdf

USFS (U.S. Department of Agriculture, Forest Service). 2005. Land Management Plan, Part 3: Design Criteria for the Southern California National Forests. [online] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5166878.pdf

USFS (U.S. Department of Agriculture, Forest Service). 2006. Forest Service Manual, Chapter 1920 – Land Management Planning. [online] http://www.fs.fed.us/emc/nfma/includes/directives/id_fsm_1920_land_management_planning.pdf

USFS (U.S. Department of Agriculture, Forest Service). 2007. Forest Service Handbook (FSH 1909.12). [online] http://www.fs.fed.us/im/directives/fsh/1909.12/

USFS (U.S. Department of Agriculture, Forest Service). Hernandez, Tasha, (District Natural Resources Officer). Personal communication with POWER Engineers, Inc. July 27, 2011.

USFS (U.S. Department of Agriculture, Forest Service). Seastrand, Justin, (Special Uses Coordinator). Personal communication with POWER Engineers, Inc. February 16, 2010.

USFS (U.S. Department of Agriculture, Forest Service). Forest Service Schedule of Proposed Actions for the Angeles National Forest. [online] http://www.fs.fed.us/sopa/forest-level.php?110501. Accessed 7/18/11.

Resource Discussion References

Air Quality

Antelope Valley Air Quality Management District. 2004. Ozone Attainment Plan. April 20.

______. 2008. Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). May 20.

______. 2009. Rules and Regulations. [online] http://www.avaqmd.ca.gov/index.aspx?page=102

Association of Environmental Professionals. 2007. *Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*. June.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2001. *Air Quality Conformity for Managers – Satellite Broadcast Course Number 7000-06BC*. [online]

http://www.blm.gov/nstc/air/index.html. National Science & Technology Center, Denver, CO.

______. 2009. *Air Resource Management Program Manual.*

California Air Pollution Control Officers Association. 2008. *CEQA and Climate Change – Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*. January.

California Air Resources Board. 2006. Health and Air Pollution. [online] http://www.arb.ca.gov/research/health/health.htm.

______. 2007a. Air Quality Trend Summaries. [online] http://www.arb.ca.gov/adam/welcome.html.

______. 2007b. EMFAC2007 Model. [online] http://www.arb.ca.gov/msei/onroad/onroad.htm.

______. 2007c. OFFROAD2007 Model. [online] http://www.arb.ca.gov/msei/offroad/offroad.htm.

______. 2007d. *Staff Report, California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit*. November 16.

______. 2007e. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*. October.

______. 2008. AB 32 Scoping Plan. [online] http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

______. 2009. California Ambient air Quality Standards. [online] http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

California Climate Action Registry General Reporting Protocol, Version 3.0. 2008. April.

California Climate Change Center (CCCC). 2006. *Our Changing Climate, Assessing the Risks to California: A Summary Report from the California Climate Change Center*. July.

California Coastal Commission (CCC). 2006. *Discussion Draft – Global Warming and the California Coastal Commission*. December 12.

California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004.* December.

EPA (U.S. Environmental Protection Agency). 1997. *PM-2.5 Composition and Sources*. Prepared for FACA National and Regional Strategies Workgroup. Office of Air Quality Planning and Standards. [online] http://www.epa.gov/ttn/oarpg/naaqsfin/. Washington, DC

______. 2006a. *The U.S. Inventory of Greenhouse Gas Emissions and Sinks: Fast Facts.* [online] www.epa.gov/climatechange/emissions/downloads06/06FastFacts.pdf.

______. 2006b. *High Global Warming Potential (GWP) Gases. Science*. [online] Http://www.epa.gov/highgwp1/scientific.html.

______. 2006c. *Climate Change – Health and Environmental Effects*. [online] http://www.epa.gov/climatechange/effects/health.html

______. 2007. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005*. EPA 430-R-07-002. April.

______. 2007a. *The Plain English Guide to the Clean Air Act*. [online] http://www.epa.gov/air/caa/peg/index.html.Gladstein, Cliff. 2003. *Heavy Duty Fleet Modernization: From Retiring Gross Polluters to Alternate Fuels*. Presentation at California Desert Air Working Group Fall Conference, Death Valley, California. Gladstine & Associates LLC. Santa Monica, CA

Intergovernmental Panel on Climate Change (IPCC). 2007. R.B. Alley, et al. *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers*. [online] http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html.

Kern County Air Pollution Control District. 1992. Ozone Air Quality Attainment Plan.

______. 1996. *Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970, as amended*. Amended 1999.

______. 2005. *Annual California Clean Air Act Ozone Air Quality Attainment Plan Implementation Progress Report #9*. December.

______. 2009. Rules and Regulations. [online] http://www.kernair.org/.

Office of Planning and Research. 2008. *Technical Advisory: CEQA and Global Climate Change: Addressing Climate Change Through California Environmental Quality Act Review*. July 19.

______. 2009. *Proposed SB 97 CEQA Guidelines Amendments*. April 13.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Air Quality Technical Report*.

South Coast Air Quality Management District. 1999. CEQA Air Quality Handbook. (as updated)

______. 2006. *Final –Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*. October.

______. 2007. Air Quality Management Plan.

______. 2008. *Multiple Air Toxics Exposure Study III (MATES-III)*. Final Report. September

______. 2009. Rules and Regulations. [online] http://www.aqmd.gov/rules/rulesreg.html.

United Nations Framework Convention on Climate Change. 2006. *Greenhouse Gas Emissions Data, Predefined Queries, Annex I Parties – GHG total without LULUCF (land-use, land-use change and forestry)*. [online] http://unfccc.int/ghg_emissions_data/predefined_queries/items/3841.php.

USFS (U.S. Department of Agriculture, Forest Service). 2009. *Climate Change Considerations in Project Level NEPA Analysis*. January 13, 2009.

Noise

Beranek, Leo L. 1992. *Noise and Vibration Control Engineering*. John Wiley & Sons, Inc., New York, USA.

City of Lancaster, California. Code of Ordinances, Title 8 – Health and Safety, Ordinance 916,2-10-09.

City of Palmdale. 1993. General Plan, Noise Element, 1/23/93.

City of San Fernando Municipal Code. 2010. Chapter 34 Environment, Article II, Noise, Code 1957, § 14.6; Ord. No. 1512, § 1, 11-1-1999; Ord. No. 1593, § 11, 1-19—2010.

City of Santa Clarita Municipal Code. 1990. Chapter 11.44, Noise limits, Ord. 89-29, 1/23/90.

Electric Power Research Institute. 2005. "AC Transmission Line Reference Book-200 kV and Above." December.

EPA (U.S. Environmental Protection Agency). 1974. *Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety*. EPA 550/9-74-004, March 1974.

Federal Aviation Administration. 2001. *Noise Levels for U.S. Certificated and Foreign Aircraft*. November 15, 2001.

HUD (U.S. Department of Housing and Urban Development). *The Noise Guidebook.* [online] http://www.hud.gov/offices/cpd/environment/training/guidebooks/noise/

Institute of Electrical and Electronics Engineers, Inc., 1991. IEEE Standard 430-1991, "IEEE Standard Procedures for the Measurement of Radio Noise from Overhead Power Lines and Substations."

International Electrotechnical Commission. 2006. Committee on Radio Interference (CISPR) Publication 16, "Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods," 2006-07-17.

Kern County, California, Code of Ordinances, Title 8 – Health and Safety, Chapter 8.36, Noise Control., Ord. G-7577 § 2, 2007; Ord. G-6301 § 2, 1996; Prior Code § 6350.

Lord, Harold W. 1987. *Noise Control for Engineers*, Krieger Publishing Company, Malabar, Florida.

Los Angeles California County Code. 2010. Title 11 Health and Safety, 12.08.390, Exterior Noise Standards.

Los Angeles Municipal Code. 2010. "Chapter XI, Noise regulation." Last amended by legislation effective November 18, 2010.

National Oceanic and Atmospheric Administration. 2003. National Climatic Data Center. *Climatography of the United States* No. 81 Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1971 – 2000

Southwire. 2007. *Overhead Conductor Manual*. 2nd Edition. Carrollton, Georgia.

Land Use

Acton-Agua Dulce School District. 2008. Shanesfield, Al (Director of Maintenance, Operations, and Transportation). Personal communication with POWER Engineers, Inc. October 2, 2008.

Antelope Acres Town Council. 2008. Nelson, Vicki (President). Personal communication with POWER Engineers, Inc. November 10, 2008.

Antelope Valley Union High School District. 2008. Construction Department. Thompson, Cindy (Staff). Personal communication via phone with POWER Engineers, Inc. October 2, 2008.

______. 2008. Freise, Larry (Coordinator of Attendance and Special Projects). Personal communication POWER Engineers, Inc. October 2, 2008.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2008. Hogan, Mike (Realty Specialist). Visit to Ridgecrest Field Office for data request. Personal communication with POWER Engineers, Inc. October 14, 2008.

City of Lancaster. 2001. *City of Lancaster General Plan 2020* (adopted October 28, 1997 and revised December 11, 2001).

______. 2007. *Draft Master Environmental Assessment*. Prepared for the City of Lancaster by RBF Consulting, Irvine CA. Accessed April 30, 2007.

______. 2007. *Lancaster Municipal Code*. Accessed July 24, 2007.

______. 2008. Planning Department. Mortaloni, Kelly (Counter Service Staff). Personal communication with POWER Engineers, Inc. September 22 and November 14, 2008.

______. 2008.Planning Department. Kite, Richard (Staff). Personal communication with POWER Engineers, Inc. July, 2008.

______. 2009. *City of Lancaster General Plan 2030* (adopted July 14, 2009).

______. 2009. Planning Department. Swain, Jocelyn (Associate Planner). Personal communication with POWER Engineers, Inc. May 20, 2009.

City of Palmdale. 1993. *Palmdale General Plan*. Accessed January 25, 2009.

______. 1994. *City of Palmdale Zoning Ordinance*. Ordinance No. U-1060. Accessed December 14, 2008.

______. 2008. Planning Department. Koleda, Susan (City Planner). Personal communication with POWER Engineers, Inc. September 22, October 22, 24, and November 5, 2008.

______. 2008.Planning Department. Carillo, Juan (City Planner). Personal communication with POWER Engineers, Inc. September 22, 2008.

City of Santa Clarita. 2008. Jacob, Kristina (GIS Specialist). Personal communication with POWER Engineers, Inc. November 18, 2008.

______. 2008. Planning Department. Barragan, Raymond (Assistant Planner I). Personal communication with POWER Engineers, Inc. September 23, 2008.

______. 2008. Planning Department. Killebrew, Jason (Assistant Planner I). Personal communication with POWER Engineers, Inc. September 23, 2008.

Hughes-Elizabeth Lakes Union Elementary. 2008. Nunz, Penny (School Secretary). Personal communication with POWER Engineers, Inc. October 15, 2008.

Kern County. 2002. Airport Land Use Commission. *Air Installation Compatible Use Zone Study*; Air Force Plant 42, Palmdale, CA. 2002.

______. 2008. Department of Regional Planning. Clark, Todd (County Planner). Personal communication with POWER Engineers, Inc. September 23, 2008.

______. 2008. Department of Regional Planning. *Draft General Plan*. Accessed July 29, 2008.

______. 2008. Department of Regional Planning. Lowry, Julie (County Planner). Personal communication with POWER Engineers, Inc. October 8, 2008.

______. 2008. *Kern County Airport Land Use Compatibility Plan* (adopted 1996, and amended September 23, 2008).

______. 2008.Special Projects Division. Oviatt, Lorelei (Special Projects Division Chief). Personal communication via email with POWER Engineers, Inc. December 8, 11, and 12, 2008.

______. 2009. Airport Land Use Commission. McDonald, David (County Planner). Personal communication with POWER Engineers, Inc. Request for ALUCP GIS data. May 7, 8, 9, 2009.

______. 2009. Brown, Anita (Office Services Assistant). Personal communication with POWER Engineers, Inc. January 30, 2009.

______. 2009. Planning Department Graphics Division. Williams, Julie (Planning Technician). Personal communication with POWER Engineers, Inc. May 7, 2009.

______. 2009. Planning Department. Casdorph, Cheryl (Supervising Planner). Personal communication with POWER Engineers, Inc. January 15, 19, 28, 29, and 30, 2009.

______. 2010. Planning and Community Development Department. Johnson, Paul J. (Supervising Planner). Personal communication with POWER Engineers, Inc. September 27 and 30, 2010.

______. 2010. Planning and Community Development Department. Hall, Mathew (Planner 3). Personal communication with POWER Engineers, Inc. September 27, 2010.

Los Angeles Unified School District. 2008. Master Planning Department. Escolano, Wilma (Staff). Personal communication with POWER Engineers, Inc. October 15, 2008.

______. 2008. Office of Environmental Health and Safety. Streigler, Glen (Environmental Assessment Coordinator). Personal communication with POWER Engineers, Inc. October 28, 2008.

Mojave Unified School District. 2008. Office of the Superintendent. Dickerson, Paula (Administrative Assistant). Personal communication with POWER Engineers, Inc. October 2 and 15, 2008.

Palmdale School District. 2008. Facilities and Maintenance Division. Sexton, Felicia (Secretary). Personal communication with POWER Engineers, Inc. October 15, 2008.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Land Use Technical Report.*

Rosamond Municipal Advisory Council. 2009. Data request submitted through contact form online by POWER Engineers, Inc. February 2, 2009.

Saugus Union School District. 2008. Pierre, Harold (Director of Facilities). Personal communication with POWER Engineers, Inc. October 6, 28, and November 5, 2008.

South Kern Unified School District. 2008. Johnson, James (Assistant Superintendent). Personal communication with POWER Engineers, Inc. October 2, 2008.

Sulphur Springs School District. 2008. Greenwood, Carol (Assistant to the Superintendent). Personal communication with POWER Engineers, Inc. October 15, 2008.

Tehachapi Unified School District. 2008. Business Division. Watkins, Jody (Office Staff). Personal communication with POWER Engineers, Inc. October 15, 2008.

USFS (U.S. Department of Agriculture, Forest Service). 2006. Forest Service Handbook 1909.12 Chapter 80, Land Management Planning Handbook, Wild and Scenic River Evaluation. January.

______. 2008. Angeles National Forest. Tom Kaucher and Ray Kidd (Forest Rangers). Field visit for OHV roads. Personal communication with POWER Engineers, Inc. December 4, 2008.

Westside Union School District. 2008. Maintenance Department. Thomas, Nelly (Staff). Personal communication with POWER Engineers, Inc. October 7 and 8, 2008.

William S. Hart Union High School District. 2008. Otavka, Mike (Director of Facilities). Personal communication POWER Engineers, Inc. October 7, 8, and 10, 2008.

Agriculture

Antelope Valley Resource Conservation District. 2008. Nursery. Personal communication with POWER Engineers, Inc. November 10, 2008.

California Department of Conservation. Farmland Mapping and Monitoring Program. [online] http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx. Accessed December 4, 2008

______. Farmland Mapping and Monitoring Program. [online] ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/2004. Accessed December 4, 2008

______. Williamson Act Program. [online] http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx. Accessed December 4, 2008

Los Angeles County. 2009. Agricultural Commissioner's Office. Lowe, Margot. Personal communication with POWER Engineers, Inc. February 2, 2009.

______. 2009. Agricultural Commissioner's Office. Sokulsky, Richard. Personal communication with POWER Engineers, Inc. February 4, 2009.

______. 2009. Farm Bureau. Gerginis, Victoria. Office Staff. Personal communication with POWER Engineers, Inc. February 3, 2009.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Land Use Technical Report.*

Recreation

Acton-Agua Dulce Trails Council. 2008. Huber, Al (Representative). Personal communication with POWER Engineers, Inc. November 7, 2008.

Antelope Valley Conservancy Trails Recreation Committee. 2008. Committee Chair. Personal communication with POWER Engineers, Inc. October 31, November 7, December 8 and 24, 2008.

Antelope Valley Resource Conservation District and the Desert & Mountain Conservation Authority. 2008. Gordon, Danette (Staff). Personal communication with POWER Engineers, Inc. October 31, November 7 and 10, 2008.

______. 2008. Nursery. Personal communication with POWER Engineers, Inc. November 10, 2008.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Beck, Craig (Recreation & Wilderness Branch Chief for the Ridgecrest Field Office). Visit to Ridgecrest Field Office for data request. Personal communication with POWER Engineers, Inc. September 14, 2010.

California Department of Parks. 2008. Tehachapi District. Dingman, Russ (Staff). Personal communication with POWER Engineers, Inc. October 15 and 17, 2008.

California State University. Unpublished report. *Adventure pass monitoring program: Visitor survey results for the southern California national forest recreation fee demonstration program.*

CDFG (California Department of Fish and Game). 2008. Dickerson, Terry (South Coast Region Senior Environmental Scientist). Personal communication with POWER Engineers, Inc. October 3, 2008.

______. 2008. VanKeuren, Kristine (Administrative Officer). Personal communication with POWER Engineers, Inc. Public Records Act Request for CDFG conservation easement data. October 2 and 7, 2008.

______. 2009. Bauer, Lacy (Staff Counsel). Personal communication with POWER Engineers, Inc. January 8, 2009.

______. 2009. Blankenship, Dan (Staff Environmental Scientist). Personal communication with POWER Engineers, Inc. January 8 and 23, 2009.

City of Lancaster. 2008. Department of Parks and Recreation. Greene, Robert (Interim Parks Director). Personal communication with POWER Engineers, Inc. September 22, 2008.

______. 2008. Department of Parks and Recreation. Rosa, Mike (General Manager). Personal communication with POWER Engineers, Inc. September 22, 2008.

______. 2009. Planning Department. Ng, Chuen (Associate Planner). Personal communication with POWER Engineers, Inc. May 20, 2009.

City of Santa Clarita. 2009. Stoll, Barbara (Acquisition Specialist for Open Space and Real Property). Personal communication with POWER Engineers, Inc. January 8, 2009.

Los Angeles County. 2008. Department of Parks and Recreation. Chien, Jui Ing (County Planner). Personal communication with POWER Engineers, Inc. September 3 and 18, 2008.

Pacific Crest Trail Association. 2009. *2007-2009 Strategic Plan* (approved July 15, 2006, and updated March 29, 2009). Richer, J.R.; Brown, R.W.; Aldana, C.B. 2002.

______. 2009. Wilson, Suzanne (Regional Representative). Personal communication with POWER Engineers, Inc. November 17 and December 8, 2009.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Land Use Technical Report*.

USFS (U.S. Department of Agriculture, Forest Service). 2008. Angeles National Forest. Tom Kaucher and Ray Kidd, Forest Rangers. Field visit for OHV roads. Personal communication with POWER Engineers, Inc. December 4, 2008.

______. 2010. Angeles National Forest. Seastrand, Justin (Special Uses Coordinator). Personal communication with POWER Engineers, Inc. March 3, 2010.

______. 2010. Angeles National Forest. Annis, David Charles (Geologist/Assistant Resource Officer for the Santa Clara/Mojave River RD). Personal communication with POWER Engineers, Inc. April 20, 2010.

Public Services and Utilities

Acton-Agua Dulce School District. 2008. Shanesfield, Al (Director of Maintenance, Operations, and Transportation). Personal communication with POWER Engineers, Inc. October 2, 2008.

Antelope Valley East Kern Water Agency. 2010.

Antelope Valley Union High School District. 2008. Construction Department. Thompson, Cindy (Staff). Personal communication via phone with POWER Engineers, Inc. October 2, 2008.

______. 2008. Freise, Larry (Coordinator of Attendance and Special Projects). Personal communication with POWER Engineers, Inc. October 2, 2008.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2010. Gum, Linn (BLM Lands and Minerals Branch Chief). Personal communication with POWER Engineers, Inc. on January 31, 2010.

California Department of Education. [online] http://www.cde.ca.gov/re/sd/index.asp. Accessed September 2010

California Highway Patrol. [online] http://www.chp.ca.gov/depts_divs_offs/geodiv.html. Accessed July 2010.

California Integrated Waste Management Board. 2010. *Jurisdiction Diversion/Disposal Rate Summary*. Website. [online] http://www.calrecycle.ca.gov/LGCentral/Tools/MARS/DRMCMain.asp. Accessed August, 2010.

City of Los Angeles Fire Department. [online] http://lafd.org/.

City of Santa Clarita. 2010. *One Valley One Vision* General Plan document and Environmental Impact Report. [online] http://www.santa-clarita.com/ovov/

Department of Water Resources. [online] http://www.water.ca.gov/swpao/deliveries.cfm. Accessed August, 2010

Hughes-Elizabeth Lakes Union Elementary. 2008. Nunz, Penny (School Secretary). Personal communication with POWER Engineers, Inc. October 15, 2008.

Kern County Fire Department. [online] http://www.kerncountyfire.org/. Accessed July 2010.

Kern County Sherriff's Department. [online] http://www.kernsheriff.com/Pages/default.aspx. Accessed July 2010.

LADWP (Los Angeles Department of Water and Power). 2010. Los Angeles Aqueduct homepage. [online] http://www.ladwp.com/ladwp/cms/ladwp004409.jsp

Los Angeles County Department of Public Works. 2010.

Los Angeles County Fire Department. [online] http://www.fire.lacounty.gov/. Accessed July 2010.

Los Angeles County Sheriff's Department. [online] http://www.lasdhq.org/lasd_services/contract_law/municipalsrv1.html. Accessed July 2010.

Los Angeles Unified School District. 2008. Master Planning Department. Escolano, Wilma (Staff). Personal communication with POWER Engineers, Inc. October 15, 2008.

______. 2008. Office of Environmental Health and Safety. Streigler, Glen (Environmental Assessment Coordinator). Personal communication with POWER Engineers, Inc. October 28, 2008.

Mojave Unified School District. 2008. Office of the Superintendent. Dickerson, Paula (Administrative Assistant). Personal communication with POWER Engineers, Inc. October 2 and 15, 2008.

Palmdale School District. 2008. Facilities and Maintenance Division. Sexton, Felicia (Secretary). Personal communication with POWER Engineers, Inc. October 15, 2008.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Land Use Technical Report*.

Saugus Union School District. 2008. Pierre, Harold (Director of Facilities). Personal communication with POWER Engineers, Inc. October 6, 28, and November 5, 2008.

South Kern Unified School District. 2008. Johnson, James (Assistant Superintendent). Personal communication with POWER Engineers, Inc. October 2, 2008.

Sulphur Springs School District. 2008. Greenwood, Carol (Assistant to the Superintendent). Personal communication with POWER Engineers, Inc. October 15, 2008.

Tehachapi Unified School District. 2008. Business Division. Watkins, Jody (Office Staff). Personal communication with POWER Engineers, Inc. October 15, 2008.

Westside Union School District. 2008. Maintenance Department. Thomas, Nelly (Staff). Personal communication with POWER Engineers, Inc. October 7 and 8, 2008.

William S. Hart Union High School District. 2008. Otavka, Mike (Director of Facilities). Personal communication POWER Engineers, Inc. October 7, 8, and 10, 2008.

Hazardous Waste and Materials

California Environmental Protection Agency. Department of Toxic Substances Control. [online] http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Accessed August, 2010.

POWER Engineers, Inc. 2008. *Barren Ridge Renewable Transmission Project Scoping Report.* Prepared for the City of Los Angeles Department of Water and Power. May 8, 2008.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Land Use Technical Report.*

TrackInfo Services, LLC. 2010. *Environmental FirstSearch Report*. September 20, 2010.

Traffic and Transportation

BLM (U.S. Department of the Interior, Bureau of Land Management). Ridgecrest Field Office Applications for Wind and Solar Energy Generation Projects in the Project Vicinity. [online] http://www.blm.gov/ca/st/en/fo/cdd/alternative_energy/SolarEnergy.html

California Department of Transportation. 2007. *Traffic Volumes on California State Highways.* [online] http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2007TrafficVolumes.pdf

______. California Aeronautical Facilities, Airports & Heliports, (FAA) 5010 Airport Master Records. [online] http://www.dot.ca.gov/hq/planning/aeronaut/ca.html

______. District 7 Current Projects: I-5/SR-14 Direct HOV Connector. [online] http://www.dot.ca.gov/dist07/

______. District 7 Future Projects: State Route 138 Corridor Improvement Projects. [online] http://www.dot.ca.gov/dist07/ California High Speed Rail. [online] http://www.cahighspeedrail.ca.gov/

Centennial. [online] http://www.centennialca.com/index.html

City of Los Angeles Department of Transportation (LADOT). 2001-08 *Traffic Volume Books.* [online] http://www.lacity.org/ladot/2001_08Countbookpdfs/book2001-08.htm

______. 2003. Development Review. *Traffic Study Policies and Procedures.* Revised August 2003.

City of Santa Clarita Transit. 2009. *February 2009 Complete Local Schedule*. [online] http://www.santaclaritatransit.com/

City of Santa Clarita. 2008. *Traffic Impact Report Guidelines.*

______. City of Santa Clarita Trail Maps. [online] http://www.santa-clarita.com/index.aspx?page=397

Kern County Roads Department. Traffic Counts. [online] http://www.co.kern.ca.us/roads/pdf/Traffic_Counts.pdf

Los Angeles County Metropolitan Transportation Authority. 2004. *2004 Congestion Management Program for Los Angeles County*. January.

Los Angeles County Planning Department. Fairmont Butte Motorsports Park. [online] http://planning.lacounty.gov/case/view/tentative_parcel_map_no_26805_project_no_02176_fairmont_butte_motorsports/

Metro. Metro Bike Map. [online] http://www.metro.net/riding_metro/bikes/images/la_bike_map.pdf

______. Metro Bus and Metro Rail System Map. [online] http://metro.net/riding_metro/maps/images/System_Map.pdf

Metrolink. Metrolink Interactive Map. [online] http://www.metrolinktrains.com/map/map.php

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Traffic Technical Study.*

Rand McNally. 2007. *The Thomas Guide*. Chicago: Rand McNally & Company.

Southern California Association of Governments. 2008. *2008 Regional Transportation Plan Project List.*

U.S. Department of the Interior, Bureau of Reclamation, South-Central California Area Office. 2010. *Antelope Valley Water Bank Project Finding of No Significant Impact*. [online] http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=5037

USFS (U.S. Department of Agriculture, Forest Service). 2007. Roberts, Mike. Personal communication with POWER Engineers, Inc. July 7, 2010.

______. Angeles National Forest. [online] http://www.fs.fed.us/r5/angeles/

______. Schedule of Proposed Actions for the Angeles National Forest. http://www.fs.fed.us/sopa/forest-level.php?110501

Visual Resources

BLM (U.S. Department of the Interior, Bureau of Land Management). 1986a. *Manual H-8410-1 - Visual Resource Inventory.* [online] http://www.blm.gov/nstc/VRM/8410.html

______. 1986b. *Manual H-8431. Visual Resource Contrast Rating*. [online] http://www.blm.gov/nstc/VRM/8431.html.

City of Lancaster. 1997. *City of Lancaster General Plan 2020*.

______. 2008. *City of Lancaster General Plan 2030 Draft Policy Document*. [online] http://www.cityoflancasterca.org/Index.aspx?page=427

City of Los Angeles. 2001. *City of Los Angeles General Plan*. [online] http://cityplanning.lacity.org/cwd/gnlpln/

City of Palmdale. 1993. *Palmdale General Plan*. [online] http://www.cityofpalmdale.org/departments/planning/general_plan/index.html

City of San Fernando. 2000. *City of San Fernando Revised General Plan*.

City of Santa Clarita. 1991. *City of Santa Clarita General Plan*. [online] http://www.santa-clarita.com/cityhall/cd/planning/general_plan.asp

______. 2001. *Santa Clarita Beautification Master Plan*. [online] http://www.santa-clarita.com/cityhall/cd/planning/beautification/

Fenneman. N.M. 1931. *Physiography of the Western United States*. New York and London: McGraw Hill, Book Company Inc.

Jones and Jones. 1976. *Measuring the Visibility of High Voltage Transmission Facilities in the Pacific Northwest*. Seattle: Jones & Jones.

Kern County. 2007. *Kern County General Plan*. [online] http://www.co.kern.ca.us/planning/plandoc.asp

Los Angeles County. 1974. Department of Regional Planning. *Los Angeles County General Plan Scenic Highways Element*. [online] http://planning.lacounty.gov/assets/upl/project/gp_web80-scenic-highway-element.pdf

______. 1986. Department of Regional Planning. *Antelope Valley Areawide General Plan*.

______. 1990. Department of Regional Planning. *Santa Clarita Valley Area Plan*.

______. 2008. Department of Regional Planning. *Los Angeles County General Plan Comprehensive Update and Amendment*. [online] http://planning.lacounty.gov/generalplan/#anc-download

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Visual Resources Technical Report*.

Rosamond Community Services District. 2007. *Rosamond CSD Park System Master Plan*. [online] http://www.rosamondcsd.com/rcsd_forms.php USFS (U.S. Department of Agriculture, Forest Service). 1995. *Agriculture Handbook Number 701 -Landscape Aesthetics, a Handbook for Scenery Management*.

______. 1997. Pacific Southwest Region. *Ecological Subregions of California, Section and Subsection Descriptions*. [online] http://www.fs.fed.us/r5/projects/ecoregions.

Cultural Resources

Bean, Lowell John, and Charles R. Smith. 1978b. "Serrano." In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). Pp. 570-574. Smithsonian Institution, Washington D.C.

Blackburn, Thomas C., and Lowell John Bean. 1978. "Kitanemuk." In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). Pp. 564-569. Smithsonian Institution, Washington D.C.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2011. Ridgecrest Field Office. Storm, Donald (Archaeologist). Personal Communication with POWER Engineers, Inc.

California Department of Water Resources. 2000. Pyramid Lake. [online] http://www.water.ca.gov/recreation/brochures

Castillo, Edward D. 1978. "The Impact of Euro-American Exploration and Settlement." In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). Smithsonian Institution, Washington D.C.

City of Ridgecrest. n.d. [online] http://www.ci.ridgecrest.ca.us/index.aspx

Clark. Al. 1999. "The 1850s – Gold Lures the First Settler's to Kern County." [online] http://faculty.ulv.edu/

Digital Desert. n.d.1. "Kawaiisu." [online] http://mojavedesert.net/kawaiisu-indians/

Digital Desert. n.d.2. "Mojave Road." [online] http://mojavedesert.net/history/mojave-road/

Dillon, Brian. 2007. *Phase I Archaeological Survey and Cultural Resources Inventory of APN 2833-003-076&77, 7+ Acres in Placerita Canyon, City of Santa Clarita, Los Angeles County*. Prepared for Mr. Tod Tomei.

Fernandeño Tataviam Band of Mission Indians. 2011. *A Social and Political History of the Fernandeño Tataviam Band of Mission Indians.* [online] http://www.tataviam-nsn.us/heritage/tribal-history

Garretson, Rob. 2010. The California Missions On-Line Project. [online] http://www.cuca.k12.ca.us/lessons/missions/contents/index.html

Grant, Campbell. 1978a. Chumash, Introduction. In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). pp.505-508. Smithsonian Institution, Washington D.C.

______. 1978b. "Interior Chumash." In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). pp.530-534. Smithsonian Institution, Washington D.C.

Harnish, Eric. 1996. "New Boom for Historic Oil Town? Aging, weather-worn Mentryville to be opened to the public this spring." In the *San Diego Union-Tribune*.

King, Chester, and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians*, Volume 8, California (Robert F. Heizer, editor). Pp. 535-537. Smithsonian Institution, Washington D.C.

LADWP (Los Angeles Department of Water and Power). 2009. *The Story of the Los Angeles Aqueduct: A New Supply*. [online] http://wsoweb.ladwp.com

Love, Bruce. 1997. *Cultural Resources Survey Report: Bakersfield-Rialto Fiber optic Line Project, Kern, Los Angeles, and San Bernardino Counties, California*. Submitted to North State Resources, Redding, California.

Macko, Michael, et al. 1993. National Register Eligibility Determinations for Historic Resources Along the Proposed AT & T Light Guide System, Victorville to Bakersfield. California. Prepared for Lilburn Corporation.

McKenna, Jeanette et.al. 2007. *A Phase I Cultural Resources Investigation of Assessor Parcel Number 3204-023-182, Approximately 10 acres of Land Near Avenue M-8 and 70th Street West in the City of Palmdale, Los Angeles County, California*.

Pool, Bob. 1997. "Ridge Route's Scholar." Los Angeles Times. October 13, 1997. [online] http://www.ridgeroute.com/story1.htm

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Cultural Resources Technical Report and Class I and Class II Inventory Report*.

Santa Clarita Valley Historical Society (SCVHS). 2009. *Santa Clarita Valley History in Pictures*. [online] http://www.SCVHistory.com

Smith, Charles R. 1978. "Tubatulabal." In *Handbook of North American Indians,* Volume 8, California (Robert F. Heizer, editor). Pp. 437-445. Smithsonian Institution, Washington D.C.

USFS (U.S. Department of Agriculture, Forest Service). 2001. Vance, Darrell. *Heritage Resource Evaluation of the Angeles National Forest FY01 Road Maintenance Contract, Phase 1*, A.R.R. #05-01-00-640

______. 2002a. Vance, Darrell. *Heritage Resource Evaluation of the Department of Public Works, Road Maintenance Division, Bouquet Canyon Culvers Maintenance Project, Santa Clara-Mojave Rivers Ranger District, Angeles National Forest, Los Angeles County* (A.R.R.# 05-01-00-800). Angeles National Forest. Arcadia, California.

______. 2002b. Vance, Darrell. *2002 Copper Fire Suppressions and Rehabilitation Archaeological Reconnaissance Report* (#05-01-00682), Angeles National Forest, Los Angeles County (A.R.R.# 05-01-00-800). Angeles National Forest. Arcadia, California.

______. 2008. Angeles National Forest. Vance, Darrell (Forest Archaeologist / Heritage Program Manager). 2008. Personal Communication with POWER Engineers, Inc.

______. 2008. Angeles National Forest. Walker, Janelle (Archaeologist). 2008. Personal Communication with POWER Engineers, Inc.

______. 2009. Angeles National Forest. Vance, Darrell (Forest Archaeologist / Heritage Program Manager). Personal Communication with POWER Engineers, Inc.

______. 2010. Angeles National Forest. Vance, Darrell (Forest Archaeologist / Heritage Program Manager). Personal Communication with POWER Engineers, Inc.

______. 2011. Angeles National Forest. Vance, Darrell (Forest Archaeologist / Heritage Program Manager). Personal Communication with POWER Engineers, Inc.

Warren, Claude N. 1980. "Pinto Points and Problems in Mojave Desert Archaeology." In *Anthropological Papers in Memory of Earl H. Swanson, Jr.*, edited by Lucille B. Harten, Claude N. Warren, and Donald R. Tuohy, pp. 67-76. Idaho Museum of Natural History Special Publication. Pocatello.

______. 1984. "The Desert Region." In *California Archaeology*, by Michael Moratto. Academic Press. New York.

Warren, Claude N., and Robert H. Crabtree. 1986. "Prehistory of the Southwestern Area." In Volume 11, *Great Basin*, (Warren L. d'Azevedo, editor) pp. 183-193. Handbook of North American. Smithsonian Institution, Washington, D.C.

Worden, Leon. 1996. "Newhall Ranch Study: California's First Gold?" Part III, Latins Invade, Conquer Western SCV. [online] http://www.scvhistory.com/scvhistory/signal/worden

Wildfire Prevention and Suppression

American Helicopter Services and Aerial Firefighting Association. 2007. *Tutorial: Aerial Firefighting*. [online] http://www.ahsafa.org/tutorial.html.

Anderson, H. 1982. *Aids to Determining Fuel Models for Estimating Fire Behavior*. Gen Tech Rpt. INT-122. Ogden, UT: USDA, Intermountain Forest and Range Experiment Station. p. 22.

Angeles Forest and Valleys Fire Safe Council. 2010. Vernetti, Laura (Secretary/Treasurer). Personal communication with POWER Engineers, Inc.

Behrens, J. and Brooks, J. 2000. *Wind in Their Wings: The Condor Recovery Program*. Endangered Species Bulletin, Vol. 15 No. 3. p. 8-9.

BLM (U.S. Department of the Interior, Bureau of Land Management). *CDD Fire Plan, Fire Management Units-Ridgecrest*. p. 547-560.

______. 2010. Gum, Linn (Lands and Mineral Branch Chief). Personal communication with POWER Engineers, Inc.

______. 2010. Harris, Glenn (Natural Resource Specialist). Personal communication with POWER Engineers, Inc.

California Atlas Geospatial Clearinghouse. [online] http://atlas.ca.gov/download.html?sl=casil.

California Department of Forestry and Fire (CAL FIRE). 2005. *Fire and Resource Assessment Program: Fuels: Surface Fuels* GIS Data, Edition 05_1, OID 705.

______. 2007. *Fire Perimeter: Wildfires*. GIS Data.

______. 2007. Fire and Resources Assessment Program (FRAP).

California State Parks Department. 2010. Mathews, Kim (Senior Environmental Scientist). Personal communication with POWER Engineers, Inc.

Castaic Lake State Recreation Area. 2010. Bonnett, Lori (Superintendent). Personal communication with POWER Engineers, Inc.

Castillo, E. 1998. *Short Overview of California Indian History*. [online] http://www.nahc.ca.gov/califindian.html

City of Chino Hills. *Safety Concerns*. [online] http://www.chinohills.org/index.aspx?NID=834.

Conard, Susan G., and David R. Weise. 1998. *Management of fire regime, fuels, and fire effects in southern California chaparral: lessons from the past and thoughts for the future.* Fire in Ecosystem Management: Shifting the Paradigm from Suppression to Prescription. p. 342-350.

Database of State Initiatives for Renewables and Efficiency (DSIRE). 2009. California Incentives/Policies for Renewables & Efficiency. [online] http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA25R&re=1&ee=1.

Department of Water Resources, State of California. *Recent California Drought*. [online] http://www.water.ca.gov/drought/docs/CalDrought.pdf.

EPA (U.S. Environmental Protection Agency). 1996. AP-42 *Fifth Edition Compilation of Air Pollutants Emission Factors*, vol. 1 Stationary Points and Area Sources. Ch. 13.1 Wildfires and Prescribed Burning.

______. 2009. *Renewable Portfolio Standards: An Effective Policy to Support Clean Energy Supply*. [online] http://www.epa.gov/chp/state-policy/renewable_fs.html.

Johnson, M., Rew, L., Maxwell, B., Sutherland, S. 2006. *The Role of Wildfire in the Establishment and Range Expansion in of Non-native Plant Species into Natural Areas: A Review of Current Literature.*

Keeley, J., and Zedler, P. 2009. *Large, High Intensity Fire Events in Southern California Shrublands: Debunking the Fire-grain Age Patch Model*. Ecological Applications, Vol. 19(1), p. 69-94.

Keeley, J., Fotheringham, C., Morais, M. June 11, 1999. *Reexamining Fire Suppression Impacts on Brushland Fire Regimes*. Science, vol. 284, p.1829-1832.

Keeley, Jon. 1995. *Fire Management Impacts on invasive Plants in the Western United States*. Conservation Biology vol. 20, No. 2, p. 375-384.

______. 2002. *Native American Impacts on Fire Regimes of the California Coastal Ranges*. Journal of Biogeography, Vol. 29, p. 303-320.

Kern County. 2007. *General Plan*. Safety Element.

LADWP (Los Angeles Department of Water and Power). 2010. Parker, Nadia (Project Manager). Personal communication with POWER Engineers, Inc.

Levine, J. and Cofer, W. 2000. *Boreal Forest Fire Emissions and the Chemistry of the Atmosphere*. In: Kasischke, Eric S.; Stocks, Brian J., eds. Fire, climate change, and carbon cycling in the boreal forest. Ecological Studies Vol. 138. New York: Springer-Verlag: 31-48.

Los Angeles County Fire Department. 2009. Forestry. Fire Plan and Vegetation Management. [online] http://www.fire.lacounty.gov.

______. 2009. *Station Fire Review, Observations, and Recommendations*.

______. 2010. Lopez, J. (Deputy Forester). Personal communication with POWER Engineers, Inc.

Los Angeles County. 1990. *General Plan*. Safety Element.

Minnich, Richard. 1995. *Fuel-Driven Fire Regimes of the California Chaparral.* Brushfires in California Wildlands: Ecology and Resource Management, p. 21-27.

National Firefighting Protection Association (NFPA). 2001. Firefighter Fatalities Database, 1980-1999: *Electrical Hazards During Wildfire Suppression Activities,* 1980-1990.

National Institute for Occupational Safety and Health (NIOSH). 2002. *Firefighters Exposed to Electrical Hazards during Wildland Fire Operations*.

National Science Foundation. 2007. *U.S. Fires Release Enormous Amounts of Carbon Dioxide.* Press Release 07-163. October 31, 2007.

Phuleria, Fine, Zhu, Sioutas. 2005. *Air Quality Impacts of the October 2003 Southern California Wildfires*. Journal of Geophysical Research. Vol. 10, p. 1-11.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Wildfire and Fuels Technical Report.*

Sand Canyon Fire Safe Council. 2010. Levison, Ruthann (Communications Chair). Personal communication with POWER Engineers, Inc.

Schimel, D.S. 1995. *Terrestrial Ecosystems and the Global Carbon Cycle*. Global Change Biology. p. 1.

Schroder M. and Buck, C. 1970. Fire weather. Agriculture handbook 360, USDA-FS NFES 1174. p. 180.

Scott J., and Burgan R. 2005. *Standard Fire Behavior Fuel Models: A Comprehensive Set for use with Rothermel's Surface Fire Spread.* Gen Tech Rpt. RMRS-GTR-153. USDA, Rocky Mountain Research Station. p. 72.

Stephens S. and Suhihara, N. 1996. *Fire Management and Policy Since European Settlement*. Fire in California's Ecosystem. Ch 18, p.431-441.

Thierrault, S. 2001. *Wildfire Smoke: A Guide for Public Health Officials*. Missoula City County Health Department, Missoula, MT.

United States Census Bureau. 2008. Population Statistics. [online] http://www.census.gov.

United Water Conservation District. 2004. Santa Felicia Relicensing, FERC Project Number: 2153. *Section 6: Report on Land Management and Aesthetics.* [online] http://www.unitedwater.org/.

USFS (U.S. Department of Agriculture, Forest Service). 2000. *Wildland Fire in Ecosystems: Effects of Fire on Flora.* Rocky Mountain Research Station General Technical Report. RMRS-GTR- 42-volume 2.

______. 2003. *Influence of Forest Structure on Wildfire Behavior and the Severity of its Effects: An Overview.*

______. 2005. *Wildland Fire in Ecosystems: Effects of Fire on Soil and Water*. Rocky Mountain Research Station General Technical Report. RMRS-GTR-42-volume 4.

______. 2009. *Angeles National Forest Fire Management Plan*.

______. 2010. Baumen, Karen (District Fuels Officer). Personal communication with POWER Engineers, Inc.

______. 2010. Hawkins, Robert (Project Manager). Personal communication with POWER Engineers, Inc.

______. 2010. Seastrand, Justin (Special Project Coordinator). Personal communication with POWER Engineers, Inc.

______. 2010. Travis, Diane (Fuels Management). Personal communication with POWER Engineers, Inc.

______. 2010. Whelan, Cindy (Adaptive Management Services Natural Resource Planner). Personal communication with POWER Engineers, Inc.

Wiedinmyer, C., and J.C. Neff. 2007. *Estimates of CO2 from Fires in the United States: Implications for Carbon Management*. Carbon Balance and Management, 2:10.

Zedler, Paul. 1995. *Fire Frequency in Southern California Shrublands: Biological Effects and Management Options*. Brushfire in California Wildlands: Ecology and Resource Management, p 101-112.

Electrical Effects

Ahlbom, A.; Day, N.; Feychting, M.; Roman, E.; Skinner, J.; Dockerty, J.; Linet, M.; Michealis, J.; Olsen, J.H.; Tynes, T.; Verasalo, P.K. 2000. *A pooled analysis of magnetic fields and childhood leukaemia*. British Journal of Cancer, 83(5):692-698.

American Cancer Society. 1996. United States American Cancer Society, "Electromagnetic Field Exposure and Cancer: a Review of Epidemiological Evidence." January/February 1996.

American Conference of Governmental Industrial Hygienists (ACGIH) 2001. *Threshold Limit Values for Chemical Substances and Physical Agents*. ISBN 1-88-2417-23-2.

American Medical Association. 1994. "Effects of Electric and Magnetic Fields," Report of the Council on Scientific Affairs. United States. December 1994

American National Standards Institute (ANSI). 2007. "National Electrical Safety Code," IEEE Standard No. C2-2007.

American Physical Society. 1995. *Power Line Fields and Public Health*. Dec. 15, 1995.

Bonneville Power Administration (BPA). 1977. "Description of Equations and Computer Program for Predicting Audible Noise, Radio Interference, Television Interference, and Ozone from A-C Transmission Lines," Technical Report No. ERJ-77-167. September.

Brain, Joseph D, Kavet, Robert, McCormick, David L, Poole, Charles, Silverman, Lewis B, Smith, Thomas J, Valberg, Peter A, Van Etten, R A, Weaver,James C. 2003. *Childhood leukemia: electric and magnetic fields as possible risk factors.*

California Public Utility Commission, California Department of Health Services (CDHS) EMF Design Guidelines For Electrical Facilities, Decision 93-11-013.

Committee on Interagency Radiation Research and Policy Coordination (CIRRPC). 1991.

Dalziel, C.F. 1972. "Electric Shock Hazard," IEEE Spectrum, pp. 41-50, February.

Electric Power Research Institute (EPRI). 2005. Transmission Line Reference Book-345 kV and Above (Third Edition), Final Report #1011974, Electric Power Research Institute, Palo Alto, CA.

Electric Power Research Institute. 2007. *Advanced HVDC Systems at ±800 kV and Above.* 1013857. Final Report November 2007. Palo Alto, CA. [online] http://my.epri.com/portal/server.pt?Abstract_id=000000000001013857

EPA (U.S. Environmental Protection Agency). 1992. Science Advisory Board, Recommendations and Rationale for Analysis of Contaminant Release.

Illinois Institute of Technology Research Institute (IITRI). 1979. "The Effects of 60 Hz Electric and Magnetic Fields on Implanted Cardiac Pacemakers." *EPRI Report* EA-1174.

______. 1984. "Household Appliance Magnetic Field Survey." U.S. Naval Electronic Systems Technical Report No. EO6549-3.

Institute of Electrical and Electronics Engineers (IEEE). 1994. "IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines." IEEE Std 644-1994.

International Agency for Research on Cancer (IARC). 2002. *IARC Monographs on the evaluation of carcinogenic risks to humans*. Volume 80: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields. IARC Press. Lyon, France.

International Radiation Protection Association. 1990. The International Non-Ionizing Radiation Committee (IRPA/INIRC). Interim Guidelines. 1990.

Kavet R, Daigle JP, Zaffanella LE. 2006. "Residential magnetic fields, contact voltage and their relationship: the effects of distribution unbalance and residential proximity to a transmission line." *Health Phys* 2006; 91:592–607.

Li DK Odouli, R.; Wi, S.; Janevic, T.; Golditch, I.; Bracken, T.D.; Senior, R.; Rankin, R.; Iriye R. 2002. "A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage." *Epidemiology*, 13(1):9-20.

Linet MS, Hatch EH, Kleinerman RA, Robinson LL. Kaune WT, Friedman DR, Seversch RK, Haines CM, Hartsock CT, Niwa S, Wacholder S, Tarone RE. 1997. "Residential exposure to magnetic fields and acute lymphoblastic leukemia in children." *New England Journal of Medicine*, 337:1-7.

London SJ et al. 1991. "Exposure to residential electric and magnetic-fields and risk of childhood leukemia." American Journal of Epidemiology, 134(9):923-937.

National Academy of Sciences (NAS). 1997. *Possible Health Effects of Exposure to Residential Electric and Magnetic Fields.* Published in 1997. Available online: http://www.nap.edu/catalog.php?record_id=5155

National Electrical Safety Code (NESC). 2007. Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute. 2007 Edition, C2-2007. New York.

National Institute of Environmental Health Sciences (NIEHS). 1998. *Assessment of health effects from exposure to power-line frequency electric and magnetic fields: Working Group Report*. NIH Publication No. 98-3981. Research Triangle Park, NC: National Institute of Environmental Health Sciences of the U.S. National Institutes of Health.

______. 1999. *Health effects from exposure to power line frequency electric and magnetic fields*. NIH; National Institute of Health; NIH No. 99-4493; Research Triangle Park, NC.

______. 2002. "EMF Questions & Answers: Electric and Magnetic Fields Associated with the Use of Electric Power," DOE EMF Rapid Program, Research Triangle Park, NC.

National Institute of Health and Medical Research (INSERM). 1993. *Magnetic Fields*. France.

National Radiological Protection Board (NRPB). 2001. *Electromagnetic fields and the risk of cancer*. National Radiological Protection Board, Chilton, Dicot, Oxon, Volume 12, No.1, ISNB 0-859951-456-0.

______. 2001. *Response statement of the NRPB: ELF electromagnetic fields and the risk of cancer*. National Radiological Protection Board, Chilton, Dicot, Oxon, Volume 12, No.1, ISNB 0-859951-456-0.

______. 2004. *Advice on Limiting Exposure to Electromagnetic Fields (0-300 GHz)*. National Radiological Protection Board, Volume 15, No 2.

______. 2004. *Electromagnetic Fields and the Risk of Cancer*.

Neutra, R.R.; Del Pizzo, V.; Lee, G.M. 2002. *An evaluation of the possible risks from electric and magnetic fields (EMFs) from power lines, internal wiring, electrical occupations and appliances*. Final Report. California Department of Health Services (CDHS). California EMF Program, Oakland, CA.

Oak Ridge Associated Universities. 1992. The Committee in Interagency Radiation Research and Policy Coordination. Peach, H. G., W. J. Bonwick, and T. Wyse

Savitz DA, Wachtel H, Barnes FA, John EM, Tvrdik JG. 1988. "Case-control study of childhood cancer and exposure to 60-Hz magnetic fields." *American Journal of Epidemiology*, 128(1):21-38.

U.S. Department of Labor. Occupational Health and Safety Administration. *How Electrical Current Affects the Human Body*. [online] http://www.osha.gov/SLTC/etools/construction/electrical_incidents/eleccurrent.html

Virginia Department of Health. 1996. *Monitoring of Ongoing Research on the Health Effects of High Voltage Transmission Lines*.

Wertheimer N, Leeper E. 1979. "Electrical wiring configurations and childhood cancer." *American Journal of Epidemiology*, 109(3): 273-284.

World Health Organization (WHO). 2007. Extremely Low Frequency Fields, Environmental Health Criteria 238 (EHC 238), Geneva, Switzerland.

Social and Economic Conditions (including Environmental Justice)

BLM (U.S. Department of the Interior, Bureau of Land Management). 2008. *National Environmental Policy Act Handbook H-1790-1*.

California Board of Equalization. 2009. *Annual Report, 2007-08*. [online] http://www.boe.ca.gov/annual/annualrpts.htm#08.

California Board of Equalization. 2009. Thompson, Ken (Chief, State-Assessed Property Section). Personal communication with POWER Engineers, Inc. July 10.

California Department of Finance. 2008. State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.

______. 2008a. Economic Research Unit, California Economic Forecast. [online] http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Forecasts.htm. April.

______. 2008c. Sales and Property Tax Data.

California Employment Development Department. 2005. Industry Employment Projections, 2004-2014.

______. 2008a. Unemployment by Subarea.

______. 2008b. Construction Employment by County.

California Energy Commission. 2010. Beacon Solar Energy Project. [online] http://www.energy.ca.gov/sitingcases/beacon/index.html

CEQ (Council on Environmental Quality). 1997. *Environmental Justice: Guidance Under the National Environmental Policy Act*. Washington, DC: Executive Office of the President.

City of Lancaster. 2001. *City of Lancaster General Plan 2020*. [online] http://www.cityoflancasterca.org/Modules/ShowDocument.aspx?documentid=465

______. 2008. *Program and Financial Plan*, Fiscal Year 2008-09. Budget Overview and Reference Sections. [online] http://www.cityoflancasterca.org/Index.aspx?page=137

City of Los Angeles. 2009. *Comprehensive Annual Financial Report for the Fiscal Year ended June 30, 2008*. Prepared by the City Comptroller's Office.

______. Undated. *General Plan of the City of Los Angeles*. [online] http://cityplanning.lacity.org/cwd/gnlpln/History.htm

City of Palmdale. 1993. *City of Palmdale General Plan*. Adopted January 25. [online] http://cityplanning.lacity.org/cwd/gnlpln/History.htm

______. 2008. Adopted City Budget, 2008-2009. [online] http://www.cityofpalmdale.org/city_hall/budget/index.html

City of Santa Clarita. 1991. *City of Santa Clarita General Plan*. Adopted June 28. [online] http://www.santa-clarita.com/cityhall/cd/planning/general_plan.asp

______. 2007. Budget for Fiscal Year 2007-2008. [online] http://www.santa-clarita.com/cityhall/cmo/budget/0708/

Council on Environmental Quality. 1997. *Environmental Justice Guidance Under the National Environmental Policy Act*. Executive Office of the President. December 10.

Daily News. 2006. Los Angeles, CA. Judy O'Rourke, "Smaller, Staggered Crews to Fit Within Budget." June 7. [online] http://nl.newsbank.com/nl-search/we/Archives?p_action=doc&p_docid=1121E81BB7F7AEB8&p_docnum=2&s_accountid=AC0110111808084327950

EPA (U.S. Environmental Protection Agency). 1996. Guidelines for Incorporation Environmental Justice Concerns in EPA's Environmental Justice Analyses. July 12.

EPA (U.S. Environmental Protection Agency). 2011. Environmental Justice-Basic Information. March 15. [online] http://www.epa.gov/environmentaljustice/basics

FilmLA. 2011. On Location Production Report, Last Updated January 11, 2011. http://www.filmla.com/data_reports.php. Accessed December 7, 2011.

Fisher, Gordon M. 1992. "The Development and History of the Poverty Thresholds," Social Security Bulletin, vol.55, no.4, Winter 1992, pp. 3-14.

Greater Antelope Valley Economic Alliance. 2009. Economic Roundtable Report – *Labor, Lifestyle, Los Angeles All Within Reach*, 2009. [online] http://www.aveconomy.org/2009GAVEA_RTR_low_res.pdf

Hook, Dave. 2011. Kern County Board of Trade and Film Commission Interim Executive Director. Personal communication on December 9, 2011.

Kern County Council of Governments. 2007. *Final 2007 Destination 2030 Regional Transportation Plan*. May 17.

Kern County Sheriffs Department. [online] http://www.kernsheriff.com/Pages/default.aspx

Kern County. 2004. *Kern County General Plan*, Energy Element. [online] http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp5Energy.pdf

______. 2005. Community and Economic Development Department. *Economic Development Strategy, Final Report*. April.

______. 2007. *County of Kern Final Budget, 2007-2008*.

______. 2009. *Alta-Oak Creek Mojave Project Draft Environmental Impact Report*. August.

LADWP (City of Los Angeles Department of Water and Power). 2009. Request for Proposals (RFP) No. RFP253-09: Renewable Energy Supply Rolling (Continuous) RFP. Issued March 12. [online] http://www.allenmatkins.com/emails/RenewableEnergy_March2009/rfp.pdf

Los Angeles Almanac. 2008. City of Los Angeles Population by Community & Race 1990 Census. [online] http://www.laalmanac.com/population/po24la_1990.htm

______. 2008. City of Los Angeles Population by Community & Race 2000 Census. [online] http://www.laalmanac.com/cities/index.htm

Los Angeles County Sheriff's Department. 2009. [online] http://www.lasd.org/

______. 2009a. "Law Enforcement Needs for Grants and Cooperative Agreements Program - 2008/2009." March 3. [online] http://www.lasd.org/stations/for1/palmdale/palmdale_images/Palmdale_grant_applicaiton_.pdf

Los Angeles County. 2007. Los Angeles County 2007-08 Final Adopted Budget.

Los Angeles Police Department. 2009. "About Mission, Mission Valley Police Station." [online] http://www.lapdonline.org/mission_community_police_station/content_basic_view/1738

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Socioeconomic Resources Assessment Report*.

Southern California Association of Governments. 2008. Adopted 2008 RTP Growth Forecasts by City. [online] http://www.scag.ca.gov/forecast/index.htm.

State of California. 2008. Department of Finance. E-4 Population Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.

U.S. Bureau of the Census. 2000. 2000 Census of the Population. [online] http://quickfacts.census.gov/qfd/states/06/06037.html.

______. 2000. American FactFinder, 2000 Census.

U.S. Department of Commerce. 2008. Regional Information System. CA04—Personal income and employment summary.

______. 2008a. Regional Information System. CA25—Total employment by industry.

______. 2010. Bureau of Economic Analysis, Regional Economic Information System, Table CA-34, Average Wage per Job.

U.S. Department of Energy. 2006. National Electric Transmission Congestion Study. August.

U.S. Department of Labor, Bureau of Labor Statistics. 2009a. Occupational Injuries and Illnesses: Industry Data.

______. 2009b. Occupational Injuries and Illnesses and Fatal Injuries Profiles.

USFS (U.S. Department of Agriculture, Forest Service). 2005. Forest Service Handbook 1909.17 Economic and Social Analysis Handbook.

Biological Resources

Akcakaya, H.R. and J.L. Atwood. 1997. *A Habitat-Based Metapopulation Model of the California Gnatcatcher*. Conservation Biology 11(2): 422-434.

Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute. Washington, D.C.

Aspen Environmental Group (Aspen). 2006. Antelope-Pardee 500-kV Transmission Project Environmental Impact Report/Environmental Impact Statement. Report prepared for Southern California Edison, December 2006.

______. 2009. Final Environmental Impact Report/Statement: Southern California Edison's Application for the Tehachapi Renewable Transmission Project. Report prepared for Southern California Edison, October 2009.

Atwood, Jonathan L. and David R. Bontrager. 2001. California Gnatcatcher (*Polioptila californica*). *The Birds of North America* Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. [online] http://bna.birds.cornell.edu/bna/species/574

Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

Bartlett, R.D. and P.P. Bartlett. 2009. *Guide and Reference to the Snakes of Western North America (North of Mexico) and Hawaii*. University of Florida Press: Gainesville.

Belnap, J., J. Hilty-Kaltenecker, R. Rosentreter, J. Williams, S. Leonard, D. Eldridge. January 2001. Biological Soil Crusts: Ecology and Management (TR-1730-2). U.S. Department of the Interior Bureau of Land Management National Science and Technology Center P.O. Box 25047 Denver, CO 80225-0047

Berry, K.H. 2008. *Threats to Desert Tortoises and Their Habitats*. Introduction to Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop. The Desert Tortoise Council. Ridgecrest, CA. October 25-26, 2008.

Bettelheim, M.P. 2005. The Western Pond Turtle, *Clemmys marmorata*…A Natural History of the Species. Walnut Creek, California.

Bevanger, K. 1994. *Bird interactions with utility structures: collision and electrocution, causes and mitigating measures*. Ibis 136: 412-425.

Bevanger, K. 1998. *Biological and conservation aspects of birds mortality caused by electricity power lines: a review*. Biological Conservation 86: 67-76.

Big Sur Ornithology Lab. 2000. *Breeding Bird Inventory Report*. Los Padres National Forest (Monterey Ranger District). Chris Tenney, site coordinator.

BLM (U.S. Department of the Interior, Bureau of Land Management). 2009. California BLM Special Status Plants. [online] http://www.blm.gov/ca/pa/ssp/lists/by_species/ssplist_all.html

Bolster, B.C. 2005. Western Red Bat (*Lasiurus blossevillii*). Species Account Developed for the 1998 Reno Biennial Meeting of the Western Bat Working Group and updated at the 2005 Portland Biennial Meeting.

Brooks, M.L and J.R. Matchett. 2006. *Spatial and temporal patterns of wildfires in Mojave Desert, 1980-2004*. Journal of Arid Environments 67:148-164

Bulger, J.B., Scott, Jr., N.J. and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110(1):85-95.

California Data Exchange Center (CDEC). 2010. Online weather metadata resource. [online] http://cdec.water.ca.gov

California Department of Fish and Game (CDFG). 2000. Guidelines for assessing the effects of proposed projects on rare, threatened and endangered plants and natural communities. May 8, 2000. [online] http://www.dfg.ca.gov/about/resource-mgmt.html

______. 2003. List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database. Department of Fish and Game Biogeographic Data Branch, The Vegetation Classification and Mapping Program. September 2003 Edition.

______. 2008. California Interagency Wildlife Task Group. CWHR version 8.2 personal computer program. Sacramento, CA.

______. 2008a, 2009b, 2010, 2011. California Natural Diversity Database (CNDDB), Rare Find3, commercial version 3.1.1.

______. 2010. Special Animals List. [online] www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp

California Native Plant Society (CNPS). 2008, 2009, 2010. Inventory of rare and endangered plants of California (online edition, version 6.3). [online] http://www.cnps.web.aplus.net/cgi-bin/inv/inventory.cgi

Cal-IPC. 2006. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant council: Berkeley, CA. [online] http://www.cal-ipc.org.

D'Antonio, C.M. 2000. *Fire, plant invasions, and global changes*. In: Mooney, H.A., Hobbs, R.J. (Eds.), Invasive Species in a Changing World. Island Press, Washington, DC, pp. 65–93.

Doering, B. 2011. Personal communication. Biologist, POWER Engineers, Inc.

Fellers, G.M. 2009. California Legless Lizard. In: Jones, L.C. and R.E. Lovich, editors. Lizards of the American Southwest: A Photographic Field Guide.Tucson: Rio Nuevo Publishers, p. 473 – 475.

Geomac Wildland Fire Support (Geomac). 2009. Wildfire Viewer. [online] http://www.geomac.gov

Goosem, M. 2004. *Linear infrastructure in tropical rainforests: mitigating impacts on fauna of roads and powerline clearings*. In "Conservation of Australia's forest fauna." (Ed. Lunney, D.), Royal Zoological Society of NSW, Mosman, NSW pp 418-434.

Holland, R. F. 1986. *Preliminary descriptions of the terrestrial natural communities of California*. California Department of Fish and Game. Unpublished report.

Hughes, Janice M. 1999. Yellow-billed Cuckoo (Coccyzus americanus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. [online] http://bna.birds.cornell.edu/bna/species/418

Janss, G.F.E. 2000. *Avian mortality from power lines: a morphologic approach of a species-specific mortality*. Biological Conservation 95: 353-359.

Kern County. Draft Environmental Impact Report for the PdV Wind Energy Project. Biological Resources. September.

______. 2009. Draft Environmental Impact Report for the Alta-Oak Creek Mojave Project. Biological Resources. August.

______. 2010a. Draft Environmental Impact Report for the Pacific Wind Energy Project. Biological Resources. June.

______. 2010b. Draft Environmental Impact Report for Rosamond Solar Project. Biological Resources. July.

Kus, B. 2002. Least Bell's Vireo (Vireo bellii pusillus). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. [online] http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

Leitner, Philip. 2008. "Current Status of the Mohave Ground Squirrel." *Transactions of the Western Section of the Wildlife Society*. Volume 44: 11-29. [online] http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=29930

Los Angeles County. 2010. Draft Environmental Impact Report, AV Solar Ranch One Project, Volumes I, II, and III. June.

Lovich, J. E. and D. Bainbridge. 1999. *Anthropogenic degradation of the southern California desert ecosystem and prospects for natural recovery and restoration*. Environmental Management 24:309-326.

LSA Associates Inc. (LSA). 2007a. *Preconstruction American Badger Survey.* Antelope-Pardee 500 kV Transmission Line Project, Segments 2 and 3, Mitigation Measure B-26. Report prepared for Southern California Edison. August 2007.

_____. 2007b. *Preconstruction Burrowing Owl Survey.* Antelope-Pardee 500 kV Transmission Line Project. Segments 2 and 3. Mitigation Measure B-19A. Report prepared for Southern California Edison. October 2007. Manville II, Albert M. 2005. Bird Strikes and Electrocutions at Power Lines, Communication Towers, and Wind Turbines: State of the Art and State of the Science – Next Steps Toward Mitigation. USDA Forest Service Gen. Tech. Rep. PSW GTR 191: 1051 1064. Arlington, VA

Marini, M. A., Robinson, S. K. & Heske, E. J. 1995. Edge effects on nest predation in the Shaunee National Forest, Southern Illinois. *Biol. Conserv., 74*: 203-213.

McNab, B.K. 1974. The Behavior of Temperate Cave Bats in a Subtropical Environment. *Ecology* 55: 943-958.

Meyer, Rachelle. 2008. *Gopherus agassizii*. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). [online] http://www.fs.fed.us/database/feis/ (2011, April 27).

Mock, P. 2004. California Gnatcatcher (*Polioptila californica*). *In* The Coastal Scrub and Chaparral Bird Conservation Plan: a strategy for protecting and managing coastal scrub and chaparral habitats and associated birds in California. California Partners in Flight. [online] http://www.prbo.org/calpif/htmldocs/scrub.html

Murcia, C. 1995. *Edge effects in fragmented forests: implications for conservation*. Trends in Ecology and Evolution, 10, 58–62.

National Audubon Society (NAS). 2012. Important Bird Areas in the U.S. Available at http://www.audubon.org/bird/iba.

National Park Service. 1994. Report on Effects of Aircraft Overflights on the National Park System. Report to Congress, Prepared Pursuant to Public Law 100-91. September 12, 1994.

Olendorff, R.R., A.D. Miller and R.N. Lehman. 1981. *Suggested practices for raptor protection on powerlines-- the state-of-the-art in 1981*. Raptor Res. Rep. No. 4, Washington, DC.

PCR Services Corporation. 2001. Least Bell's Vireo and Southwestern Willow Flycatcher Focused Surveys and Habitat Assessments, Spring 2001, Angeles National Forest. Irvine, CA.

Piaggio, A. 2005. Townsend's Big-eared Bat (*Corynorhinus townsendii*). Species account developed for the 1998 Reno Biennial Meeting of the Western Bat Working Group by Sherwin, R. and updated for the 2005 Portland Biennial Meeting by Piaggio.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Biological Resources Technical Report*.

Quinn, R.D. 1990. *Habitat preferences and distribution of mammals in California chaparral* (Research paper PSW-202). USDA Forest Service, Pacific Southwest Research Station, Berkeley

Radle, A.L. 2007. *The Effect of Noise on Wildlife: A Literature Review*. [online] http://interact.uoregon.edu/MediaLit/wfae/library/articles/radle_effect_noise_wildlife.pdf

Rambaldini, D.A. 2005. Pallid Bat (*Antrozous pallidus*). Species Account Developed for the 1998 Reno Biennial Meeting of the Western Bat Working Group by R. Sherwin and updated at the 2005 Portland Biennial Meeting by Rambaldini.

Ramirez, R. S., Jr. 2007. *Arroyo toad (*Bufo californicus*) hydrogeomorphic habitat baseline analysis/radio telemetry study. Rancho Las Flores – West Fork Mojave River & Grass Valley Creek.* San Bernardino County, California. Final Report. Prepared by Cadre Environmental for Rancho Las Flores Limited Partnership. 116 pp.

Rathbun, G. and N. Scott, Jr. 2010. Workshop on the Biology and Management of the California Red-legged Frog; 2010 April 15; Livermore, CA.

Reid, F.A. 2006. *A Field Guide to Mammals of North America, Fourth Edition*. Houghton Mifflin Company: Boston.

Relyea, R.A. 2005. *The Impact of Insecticides and Herbiciedes on the Biodiversity and Productivity of Aquatic Communities*. Ecological Applications 15: 618-627

Sawyer, J. and T. Keeler-Wolf. 1995. *A manual of California vegetation*. California Native Plant Society, Sacramento.

Sedgwick, James A. 2000. Willow Flycatcher (Empidonax traillii), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. [online] http://bna.birds.cornell.edu/bna/species/533

Sergio, F., L. Marchesi, P. Pedrini, M. Ferrer, and V. Penteriani. 2005. *Electrocution alters the distribution and density of a top predator, the eagle owl Bubo bubo*. Journal of Applied Ecology, 21:836-845.

Siders, M.S. 2005. Western Mastiff Bat (*Eumops perotis*). Species Account Developed for the 1998 Reno Biennial Meeting of the Western Bat Working Group by E.D. Pierson and updated at the 2005 Portland Biennial Meeting by Siders.

Sill, N. 2011. Personal communication. Wildlife Biologist, United States Department of Agriculture, Forest Service, Angeles National Forest.

Solomon, K. R., and Thompson, D.G. 2003. *Ecological risk assessment for aquatic organisms from over-water uses of glyphosate*. Journal of Toxicology and Environmental Health, Part B. 6:289–324.

Sogge, M. 2000. Chapter 6: Breeding Season Ecology. In *USDA Forest Service Gen. Tech. Rep. RMRS-GTR-60.*

South Coast Wildlands (SCW). 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. Produced in cooperation with partners in the South Coast Missing Linkages Initiative. [online] http://www.scwildlands.org.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stebbins, R.C. 2003. *Western reptiles and amphibians*. Third Edition. Houghton Mifflin Co.: Boston.

Tatum, V.L. 2004. *Toxicity, transport and fate of forest herbicides*. Wildlife Society Bulletin. 32: 1042-1048.

Unitt, P. 2004. *San Diego County bird atlas*. Proc. San Diego Soc. Nat. Hist. 39.

USFS (U.S. Department of Agriculture, Forest Service). 2005a. Forest Service Sensitive Species website. [online] http://www.fs.fed.us/biology/tes/. Accessed November 5, 2008.

______. 2005b. Land Management Plan. Pacific Southwest Region. R5-MB-075, R5-MB-076, R5-MB-080. September 2005.

______. 2008c. Decision Memo: Whitaker Peak Condor Habitat Improvement Project. Santa Clara/Mojave Rivers Ranger District, Angeles National Forest, Los Angeles County, CA. [online] http://www.fs.fed.us/r5/angeles/projects/docs/Whitaker-Condor-DM.pdf

______. 2009. Tule Ridge/South Portal Canyon Fuels Reduction Project: Purpose and Need/Proposed Action/Decision to be Made. Santa Clara/Mojave Rivers Ranger District, Angeles National Forest. June 1, 2009. [online] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5176811.pdf

______. 2010. Decision Memo: Santa Clara Mojave River Ranger District Plantation Maintenance Project. January 8, 2010. [online] http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5176801.pdf

______. 2011. VinZant, Katie (Botanist, Angeles National Forest). Personal communication with POWER Engineers, Inc.

______. Undated. Forest Service Risk Assessment Final Reports. [online] http://www.fs.fed.us/foresthealth/pesticide/risk.shtml

USFWS (U.S. Fish and Wildlife Service). 1980. Habitat as a basis for Environmental Assessments. Division of Ecological Services, 343-5197. Washington, D.C. 29 pp.

______. 1994. *Endangered and threatened wildlife and plants; Determination of endangered status for the arroyo southwestern toad*. Federal Register 59(241):64859-64866.

______. 1996. California Condor Recovery Plan, Third Revision. Portland, Oregon. 62 pp.

______. 2006. Range-wide Monitoring of the Mojave Population of the Desert Tortoise: 2001-2005 Summary Report. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

______. 2007. National Bald Eagle Management Guidelines. Portland, Oregon. 23pp.

______. 2008. California condor occurrence data (personally supplied).

______. 2009a. Range-wide Monitoring of the Mojave Population of the Desert Tortoise: 2007 Annual Report. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

______. 2009. California condor occurrence data (personally supplied).

______. 2010a. DRAFT Range-wide Monitoring of the Mojave Population of the Desert Tortoise: 2008 and 2009 Reporting. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

______. 2010b. DRAFT Range-wide Monitoring of the Mojave Population of the Desert Tortoise: 2010 Annual Report. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

______. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

U.S. Geological Survey (USGS). 2002. The Status and Distribution of Unarmored Threespine Stickleback in the Angeles National Forest. Prepared for U.S. Forest Service, Angeles National Forest.

______. 2003. The Status and Distribution of Unarmored Threespine Stickleback in San Francisquito Canyon in the Angeles National Forest. Prepared for U.S. Forest Service, Angeles National Forest.

______. 2004. Population Monitoring and Status of the California Red-Legged Frog (*Rana aurora draytonii*) and Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) in the Angeles National Forest, 2003. Prepared for William Brown, U.S. Forest Service, Angeles National Forest.

______. 2005a. Population monitoring of the California red-legged frog (*Rana aurora draytonii*) in San Francisquito Canyon, Angeles National Forest, 2004. U.S. Geological Survey technical report prepared for the Angeles National Forest, Arcadia, CA. 24 pp.

______. 2005b. Data summary for the 2005 California red-legged frog (*Rana aurora draytonii*) surveys conducted in the Angeles National Forest. U.S. Geological Survey data summary prepared for the Angeles National Forest, Arcadia, CA. 10 pp.

______. 2007. Data summary for the 2007 California red-legged frog (*Rana draytonii*) surveys conducted in the Angeles National Forest, San Francisquito Canyon. U.S. Geological Survey data summary prepared for the Angeles National Forest, Arcadia, CA 6 pp.

______. 2008. Data Summary for the 2008 California Red-legged Frog (*Rana draytonii*) surveys conducted in the Angeles National Forest, San Francisquito Canyon. U.S. Geological Survey data summary prepared for the Angeles National Forest, Arcadia, CA 6 pp.

______. 2010. Data Summary for the 2009 California red-legged frog (*Rana draytonii*) surveys conducted in the Angeles National Forest. U.S. Geological Survey data summary prepared for the Angeles National Forest, Arcadia, CA 7pp.

______. 2011. California Red-legged Frog (*Rana draytonii*) Surveys, Angeles National Forest, 2010. U.S. Geological Survey data summary prepared for the Angeles National Forest, Arcadia, CA 6 pp.

Vaughan, T. A., and T. J. O'Shea. 1976. *Roosting ecology of the pallid bat, Antrozous pallidus*. Journal of Mammalogy 57:19-42.

Voous, K.H. 1988. Owls of the Northern Hemisphere. MIT Press, Cambridge, Massachusetts.

Wangler, M. and R. A. Minnich. 1996. Fire and succession in Pinyon-Juniper woodlands of the San Bernardino Mountains, California. *Madroño*, v. 43 p. 493-514.

Weatherspoon, C.P.; Husari, S.J.; van Wagtendonk, J.W. 1992. *Fire and fuels management in relation to owl habitat in forests of the Sierra Nevada and southern California*. In: Verner, J.; McKelvey, K.S.; Noon, B.R.; Gutiérrez, R.J.; Gould, G.I., Jr.; Beck, T.W., technical coordinators. The California spotted owl: A technical assessment of its current status. General Technical Report PSW-GTR-133. Albany, CA: Pacific Southwest Research Station, USDA Forest Service; 247-260.

Yahner, R. H. 1988. *Changes in wildlife communities near edges*. Conservation Biology, 2, 333–339.

Zarn, M. 1974. Burrowing Owl. Rep. No. 11. Habitat Management Series for Unique or Endangered Species. USDI, BLM. Technical Note T-N 250. Denver, Colorado.

Zeiner, D.C.m W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Department of Fish and Game, Sacramento, California.

Earth Resources

Allen, C.R. 1975. Geologic Criteria for Evaluating Seismicity: Geological Society of America Bulletin, v. 86, pp. 1041-1056.

Aspen Environmental Group. 2009. Tehachapi Renewable Transmission Project Geology, Soils, and Paleontology Specialist Report. August 2009.

Axelrod, D. I. 1940. The Mint Canyon flora of southern California. A preliminary statement. American Journal of Science 238:577-585.

______. 1950. The Anaverde flora of southern California. Carnegie Institution of Washington Publication 590:119-158.

______. 1982. Vegetation and climate during middle Ridge Basin deposition. In, Crowell, J. C. and Link, M. H. (eds.) Geologic History of Ridge Basin, Southern California. Soc. Econ. Paleontologists and Mineralogists, Pacific Section, p. 247-252.

Barnes, L. G. 1985. The Late Miocene dolphin *Pithanodelphis* Abel, 1905 (Cetacea: Kentriodontidae) from California. Natural History Museum of Los Angeles County Contributions in Science 367:1-27.

Bell, M. A. 1973. The Pliocene stickleback *Pungitius haynesi*: a junior synonym of *Gasterosteus aculeatus*. Copeia 3:588-590.

Blake, T.F. 2001. FRISKSP (Version 4.00), A Computer Program for the Probabilistic Estimation of Peak Acceleration and Uniform Hazard Spectra Using 3-D Faults as Earthquake Sources.

Bonilla, M.G. 1970. Surface Faulting and Related Effects in Wiegel, R.L., Editor, Earthquake Engineering: Prentice Hall, p. 47-74.

Bussino, G. R., and Barnes, L. G. 1984. The Lincoln Heights whale. Terra 22:16-19.

California Building Code. 2008. 2007 Edition. Based on 2006 International Business Code, effective January 1, 2008.

California Department of Conservation, Division of Mines and Geology (CDMG). 1962. Mines and Mineral Resources of Kern County, California, County Report 1.

______. 1983. Guidelines for Classification and Designation of Mineral Lands, Special Publication 51.

______. 1994. Update of Mineral Land Classification of Portland Cement Concrete Aggregate in Ventura, Los Angeles, and Orange Counties, California, Part II – Los Angeles County, Miller, R.V., Open File Report 94-14.

______. 1998. Seismic Hazards Evaluation of the San Fernando 7.5-Minute Quadrangle, Los Angeles County, California: Open-File Report 98-06.

______. 1998. Seismic Hazards Zones Official Map, Newhall 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Evaluation Open File Report 97-11, dated February 1.

______. 1999. Seismic Hazards Zones Official Map, Mint Canyon 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Evaluation Open File Report 98-09, dated March 25.

______. 1999. Seismic Hazards Zones Official Map, San Fernando Quadrangle, 7.5-Minute Series, Open-File Report 98-06, dated March 25.

______. 2000. Guidelines for Evaluating the Hazard of Surface Fault Rupture: Division of Mines and Geology Note 49.

______. 2001. Publications of the SMARA Mineral Land Classification Project Dealing with Mineral Resources in California.

______. 2003a. Seismic Hazards Zone Report for the Lake Hughes 7.5-Minute Quadrangle, Los Angeles County, California: Seismic Hazard Zone Report 103.

______. 2003b. Preliminary Report, Seismic Hazard Zone Report for the Rosamond 7.5-Minute Quadrangle, Los Angeles County, California: Seismic Hazard Zone Report 093.

California Department of Water Resources (CDWR). 2008. Groundwater Level Data [online] http://www.wdl.water.ca.gov

California Geological Survey. 2002. Seismic Hazards Zones Official Map, Valverde 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 76, dated December 20.

______. 2003a. Seismic Hazards Zones Official Map, Agua Dulce 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 85, dated April 17.

______. 2003b. Seismic Hazards Zones Official Map, Whitaker Peak 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 77, dated March 24.

______. 2003c. Seismic Hazards Zones Official Map, Ritter Ridge 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 83, dated August 14.

______. 2003d. Seismic Hazards Zones Official Map, Sleepy Valley 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 106, dated October 17.

______. 2003e. Seismic Hazards Zones Official Map, Lake Hughes 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 103, dated October 17.

______. 2005. Seismic Hazards Zones Official Map, Del Sur 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 101, dated February 11.

______. 2005. Seismic Hazards Zones Official Map, Lancaster West 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 95, dated February 11.

______. 2005. Seismic Hazards Zones Official Map, Rosamond 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 93, dated February 11.

______. 2008. Guidelines for Evaluating and Mitigating Seismic Hazards in California: Special Publication 117.

Cao, Tianqing, Bryant, William A., Rowshandel, Badie, Branum, David, and Wills, Christopher J. 2003. *The Revised 2002 California Probabilistic Seismic Hazard Maps*. Adapted by California Geological Survey, dated June.

Cooper, J. D. 1977.Geology of Ridge Basin. In Woyski, M. S. (ed.), Geological guidebook to the Ridge Basin, northwestern Los Angeles County, California. South Coast Geological Society, p. 7-23.

County of Los Angeles Department of Regional Planning. 1990. Los Angeles County Safety Element.

Crowell, J. C. 1952. Geology of the Lebec quadrangle, California. California Division of Mines Special Report 24:1-23.

______. 1954. Geologic map of the Ridge Basin area, California. California Division of Mines Bulletin 170, Map Sheet 7.

______. 1982. Pliocene Hungry Valley Formation, Ridge basin, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 143-149.

______. 2003. Introduction to geology of Ridge basin, southern California. In, Crowell, J. C. (ed.), Evolution of Ridge Basin, Southern California: An interplay of sedimentation and tectonics. Geological Society of America Special Paper 367:1-15.

Daviess, S. N. 1942. Contact relationship between Mint Canyon Formation and upper Miocene marine beds in eastern Ventura basin, Los Angeles County, California [M.A. thesis]. University of California, Los Angeles.

Dibblee, T. W. 1967. Areal geology of the western Mojave Desert, California. United States Geological Survey Professional Paper 522:1-153.

Dibblee, T. W., and Ehrenspeck, H. E. 1991. Geologic map of the San Fernando and Van Nuys (north 1/2) quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-33, 1 sheet, scale 1:24,000.

______. 1996a. Geologic map of the Newhall Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-56, 1 sheet, scale 1:24,000.

______. 1996b. Geologic map of the Mint Canyon Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-57, 1 sheet, scale 1:24,000.

______. 1996c. Geologic map of the Aqua Dulce Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-58, 1 sheet, scale 1:24,000.

______. 1997a. Geologic map of the Warm Springs Mountain Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-64, 1 sheet, scale 1:24,000.

______. 1997b. Geologic map of the Green Valley Quadrangle, Los Angeles County, California. Dibblee Geological Foundation Map DF-65, 1 sheet, scale 1:24,000.

______. 1997c. Geologic map of the Sleepy Valley and Ritter Ridge quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-66, 1 sheet, scale 1:24,000.

Dibblee, T. W., and Minch, J.A. 2002b. Geologic map of the Lake Hughes and Del Sur quadrangles, Los Angeles County, California. Dibblee Geological Foundation Map DF-82, 1 sheet, scale 1:24,000.

Dibblee, T.W., Jr. 1997d. Geologic Map of the Whitaker Peak Quadrangle, Los Angeles County, California: Dibblee Foundation, DF-63, Scale 1:24,000.

______. 2002a. Geologic Map of the Black Mountain Quadrangle, Los Angeles and Ventura Counties, California: Dibblee Foundation, DF-92, Scale 1:24,000.

______. 2002c. Geologic Map of the Liebre Mountain Quadrangle, Los Angeles County, California: Dibblee Foundation, DF-93, Scale 1:24,000.

______. 2006. Geologic Map of the Frazier Mountain & Lebec Quadrangles, Los Angeles County, California: Dibblee Foundation, DF-198, Scale 1:24,000.

Dickerson, R. E. 1914. The Martinez Eocene and associated formations at Rock Creek (California). University of California Publications in Geological Sciences 8:289-298.

Dolan, J.F., Sieh K., Rockwell, T.K. 2000. Late Quaternary Activity and Seismic Potential of the Santa Monica Fault System, Los Angeles, California: Geological Society of America Bulletin, Vol. 112, Issue: 10, pp. 1559-1581, dated October.

Domning, D. P. 1978. Sirenian evolution in the North Pacific Ocean. University of California Publications in Geological Sciences 118:1-176.

Durham, J. W., Jahns, R. H., and Savage, D. E. 1954. Marine-nonmarine relationships in the Cenozoic section of California. California Division of Mines Bulletin 170, Chapter 3, Contribution 7.

Ehlert, K. W. 2003. Tectonic significance of the middle Miocene Mint Canyon and Caliente formations, southern California. In, Crowell, J. C. (ed.), Evolution of Ridge Basin, southern California: An interplay of sedimentation and tectonics. Geological Society of America Special Paper 367:113-130.

Eldridge, G. H., and Arnold, R. A. 1907. The Santa Clara Valley, Puente Hill and Los Angeles Oil Districts, southern California. Department of the Interior United States Geological Survey Bulletin 309:1-237.

English, W. A. 1914a. The Fernando group near Newhall, California. University of California Publications in Geological Sciences 8:203-218.

______. 1914b. The Agasoma-like gastropods of the California Tertiary. University of California Publications in Geological Sciences 8:243-256.

Forester, R. M. and Bouwers, E. M. 1982. Paleoevironmental implications of some estuarine and non-marine ostracodes from Ridge basin. southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 239-246.

Geology.com. 2010. Debris Flows. [online] http://geology.com/articles/debris-flow/. Accessed July 25, 2011.

Google Earth. 2010. [online] http://earth.google.com

Govean, F. 1993. Final report paleontological monitoring/salvage, Mobil 70 pipeline, Lebec to Torrance segment, Kern and Los Angeles counties, California. LSA Associates, Irvine, California, LSA Project ENS101, 72 p.

Grant, U. S., and Gale, H. R. 1931. Catalogue of the marine Pliocene and Pleistocene mollusca of California and adjacent regions. Memoirs of the San Diego Society of Natural History 1:1-1036.

Groves, L. T. 1991a. Paleontology and biostratigraphy of the Plio-Pleistocene lower Saugus Formation, Santa Susana Mountains, southern California [M.S. thesis]. California State University, Northridge, 383 p.

______. 1991b. Molluscan paleontology of the Pliocene-Pleistocene lower Saugus Formation, southern California. American Conchologist 19:16–17.

Hall, C. A., Jr. 2007. Introduction to the geology of southern California and its native plants. University of California Press, 512 p.

Hart, E.W., and Bryant, W.A. 1997. Fault-Rupture Hazard Zones in California, Alquist-Priolo Special Studies Zone Act of 1972 with Index to Special Studies Zones Maps: California Division of Mines and Geology, Special Publication 42.

Hendrix E. D., and Ingersoll, R. V. 1987. Tectonics and alluvial sedimentation of the upper Oligocene/lower Miocene Vasquez Formation, Soledad basin, southern California. Geological Society of America Bulletin 98:647-663.

Hendrix, E. D. 1993. Soledad Basin, central Transverse Ranges, California. In, Sherrod, D. R, and Nielson, J. E. (eds.), Tertiary stratigraphy of highly extended terranes, California, Arizona, and Nevada. United States Geological Survey Bulletin, Report: B 2053:243-250.

Hershey, O. H. 1902. Some Tertiary formations of southern California. American Geologist 29:349–372.

Howard, H. 1944. A Miocene hawk from California. The Condor 46:236-237.

Hurlburt, G. 2004. Vertebrate paleontological resources in the Antelope Transmission Project Study Area, provided in the Proponent's Environmental Assessment (PEA) Antelope Transmission Project, Segment 1, filed by Southern California Edison Company December 9, 2004. Volume 3, Appendix E.

Jahns, R. H. 1939. Miocene stratigraphy of the easternmost Ventura basin, California: A preliminary statement. American Journal of Science 237:818-825.

______. 1940. Stratigraphy of the easternmost Ventura basin California, with a description of a new lower Miocene mammalian fauna from the Tick Canyon Formation. Carnegie Institution of Washington Publication 514:145-194.

Jefferson, G. T. 1991. A catalog of late Quaternary vertebrates from California. Natural History Museum of Los Angeles County, Technical Reports 7:1-129.

Jennings, C.W., and Bryant, W.A. 2010. Fault Activity Map of California and Adjacent Areas: California Division of Mines and Geology, California Geologic Data Map Series, Map No. 6, Scale 1:750,000.

Jennings, C.W., and Strand, R.G. 1969. Geologic Map of California: Los Angeles Sheet, California Division of Mines and Geology, Scale 1:250,000.

Johnson, B. K. 1952. Geology of the Castaic Creek-Elizabeth Lake Canyon area [M.S. thesis]. University of California, Los Angeles, 44 p.

Kellogg, R. 1929. A new cetothere from southern California. University of California Publications in Geological Sciences 18:449-457.

______. 1934. A new cetothere from the Modelo Formation at Los Angeles, California. Carnegie Institution of Washington Publication 447:83-104.

Kelly, T. S. 1998. New middle Miocene equid crania from California and their implications for the phylogeny of the Equini. Natural History Museum of Los Angeles County Contributions in Science 473:1-43.

Kern County. 2005. Multi-Hazard Mitigation Plan, dated November.

______. 2007. General Plan, Safety Element, Chapter 4, dated March 13.

Kern Master Environmental Assessment Resource. 2004. Flood Plain & Dam Inundation Areas.

Kew, W. S. W. 1923. Geologic formations of a part of southern California and their correlation. American Association of Petroleum Geologists Bulletin 7:411-420.

______. 1924. Geology and oil resources of a part of Los Angeles and Ventura counties. United States Geological Survey Bulletin 753:1–202.

Kirby, M. X. 1991. Macropaleontology and biostratigraphy across the Cretaceous/Tertiary boundary, San Francisquito Formation, Los Angeles County, southern California [M.S. thesis]. California State University, Northridge, 134 p.

Kirby, M. X., and Saul, L. R. 1995. The Tethyan bivalve *Roudairia* from the Upper Cretaceous of California. Palaeontology 38:23-38.

Kooser, M. 1982. Stratigraphy and sedimentology of the type San Francisquito Formation, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 53-61.

Kooser, M. A. 1980. Stratigraphy and sedimentology of the San Francisquito Formation, Transverse Ranges, California [Ph.D. thesis]. University of California, Riverside, 201 p.

______. 1985. Paleocene plesiosaur? In, Reynolds, R. E. (ed.), Geologic investigations along Interstate 15; Cajon Pass to Manix Lake, California. San Bernardino County Museum, p. 43-48.

Link, M. H. 1982. Stratigraphic nomenclature and age of Miocene strat, Ridge basin, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 5-11.

Lucas, S. G., and Reynolds, R. E. 1993. Putative Paleocene plesiosaurs from Cajon Pass, California, U.S.A. Cretaceous Research 14:107-111.

Maxson, J. H. 1928. A Tertiary mammalian fauna from the Mint Canyon Formation, southern California [M.S. thesis]. California Institute of Technology, Pasadena, California, 25 p.

______. 1930. A Tertiary mammalian fauna from the Mint Canyon Formation of southern California. Carnegie Institution of Washington Publication 41:77-112.

McDougall, K. 1982. Microfossil assemblages from the Castaic Formation, Ridge Basin, southern California. In: Crowell, J. C., and Link, M. H., eds., Geologic history of Ridge

Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 219-228.

Miller, L. 1929. A New cormorant from the Miocene of California. Condor 31:167-172.

Miller, W. E. and Downs, T. 1974. A Hemphillian local fauna containing a new genus of Antilocaprid from southern California. Natural History Museum of Los Angeles County Contributions in Science 258, 36 p.

Mount, J. D. 1971. A late Miocene flora from the Solemint area, Los Angeles County, California. Bulletin of the Southern California Paleontological Society 3:1-4.

Muehlberger, W. R., and Stanton Hill, H. 1958. Geology of the central Sierra Pelona, Los Angeles County, California. American Journal of Science 256:630-643.

Norris, R.M., and Webb, R.W. 1990. Geology of California: John Wiley & Sons, 541 pp.

Oakeshott, G. B. 1950. Geology of the Placerita oil field, Los Angeles County, California. California Journal of Mines and Geology 46:43–79.

______. 1958. Geology and mineral deposits of the San Fernando Quadrangle, Los Angeles County, California. California Division of Mines Bulletin 172:1-147.

Popenoe, W. P., and Saul, L. R. 1987. Evolution and classification of the Late Cretaceous-Early Tertiary gastropod *Perissitys*. Natural History Museum of Los Angeles County Contributions in Science 380:1-37.

POWER Engineers, Inc. (POWER). 2011a. *Barren Ridge Renewable Transmission Project Paleontological Resources Assessment Report*.

POWER Engineers, Inc. (POWER). 2011b. *Barren Ridge Renewable Transmission Project Preliminary Geotechnical Evaluation*.

Reeder, W. G. 1960. A new rodent genus (family Heteromyidae) from the Tick Canyon Formation of California. Bulletin of the Southern California Academy of Sciences 59:121-132.

Repenning C. A., and Tedford, R. H. 1977. Otarioid seals of the Neogene. United States Geological Survey Professional Paper 992:1-93

Sage, O., Jr. 1975. Sedimentological and tectonic implications of the Paleocene San Francisquito Formation, Los Angeles County, California. California Division of Mines and Geology Special Report 118:162-169.

Saul, L. R. 1983. *Turritella* zonation across the Cretaceous-Tertiary boundary, California. University of California Publications in Geological Sciences 125:1-165.

Savage, D. E., Downs, T., and Poe, O. J. 1954. Cenozoic land life of southern California (part 6). In, Jahns, R. H. (ed.), Geology of Southern California. California Division of Mines Bulletin 170, p. 43-58.

Sharp, R. P. 1936. Geology of the Ravenna quadrangle, Los Angeles County, California [M.S. thesis]. California Institute of Technology, Pasadena, California, 81 p.

Skolnick, H., and Arnal, R. E. 1959. Ventura basin edge environment. American Association of Petroleum Geologists Bulletin 43:477-483.

Smith, A.R. 1964. Geologic Map of California, Bakersfield Sheet, Olaf P. Jenkins Edition: California Division of Mines and Geology, Scale 1:250,000.

Smith, P. R. 1982. Sedimentology and diagensis of the Miocene Peace Valley Formation, Ridge Basin, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 151-157.

Southern California Earthquake Center (SCEC). 2004. Index of Faults of California [online] http://www.data.scec.org/fault_index/. Dated June 17.

Squires, R. L., and Saul, L. R. 2006. New buccinoid gastropods from the uppermost Cretaceous and Paleocene strata of California and Baja California, Mexico. The Nautilus 120:66-78.

______. 2007. Paleocene pareorine turritellid gastropods from the Pacific slope of North America. The Nautilus 121:1-16.

Squires, R. L., and White, D. R. 1983. Common megafossils of the lower Saugus Formation, northern Simi Valley area, California. In, Squires, R. L., and Filewicz, M. V. (eds.), Cenozoic geology of the Simi Valley area, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section Book 35:221–224.

Squires, R. L., Groves, L. T, and Smith, J. T. 2006. New information on molluscan paleontology and depositional environments of the upper Pliocene Pico Formation, Valencia area, Los Angeles County, southern California. Natural History Museum of Los Angeles County Contributions in Science 511:1-24.

Squires, R. L., Zinsmeister, W. J., and Paredes-Mejia, L. M. 1989. *Popenoeum*, a new pseudolivine gastropod genus; widespread and most diversified during the Paleocene. Journal of Paleontology 63:212-217.

Stanton, R. J., Jr. 1960. Paleoecology of the upper Miocene Castaic Formation, Los Angeles County, California [Ph.D. dissertation]. California Institute of Technology, Pasadena, California, 355 p.

______. 1966. Megafauna Of the Upper Miocene Castaic Formation, Los Angeles County, California. Journal of Paleontology 40:21-40.

______. 1982. Molluscan paleoecology and depositional environment of the Miocene Castaic Formation, Ridge Basin, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 211-218.

State of California. 1974a. Special Studies Zones, Burnt Peak Quadrangle, 7.5 Minute Series.

______. 1974b. Special Studies Zones, Del Sur Quadrangle, 7.5 Minute Series, Revised 1979.

______. 1974c. Special Studies Zones, Lake Hughes Quadrangle, 7.5 Minute Series.

______. 1974d. Special Studies Zones, La Liebre Ranch Quadrangle, 7.5 Minute Series.

______. 1974e. Special Studies Zones, Lebec Quadrangle, 7.5 Minute Series.

______. 1974f. Special Studies Zones, Liebre Mountain Quadrangle, 7.5 Minute Series.

______. 1976a. Special Studies Zones, Liebre Twins, 7.5 Minute Series.

______. 1976b. Special Studies Zones, Mojave Quadrangle, 7.5 Minute Series.

______. 1976c. Special Studies Zones, NE 1/4 Mojave Quadrangle, 7.5 Minute Series.

______. 1976d. Special Studies Zones, NW 1/4 Mojave Quadrangle, 7.5 Minute Series.

______. 1976e. Special Studies Zones, Monolith Quadrangle, 7.5 Minute Series.

______. 1976f. Special Studies Zones, Tehachapi South Quadrangle, 7.5 Minute Series.

______. 1976g. Special Studies Zones, Tyler Horse Ridge Quadrangle, 7.5 Minute Series.

______. 1979a. Special Studies Zones, Palmdale Quadrangle, 7.5 Minute Series, dated January 1.

______. 1979b. Special Studies Zones, Ritter Ridge Quadrangle, 7.5 Minute Series, dated January 1.

______. 1979c. Special Studies Zones, Sleepy Valley Quadrangle, 7.5 Minute Series, dated January 1.

Stirton, R. A. 1933. A critical review of the Mint Canyon mammalian fauna and its correlative significance. American Journal of Science 26:569-576.

______. 1939. Significance of Tertiary mammalian faunas in Holarctic correlation with especial reference to the Pliocene of California. Journal of Paleontology13:130-137.

United States Department of Agriculture (USDA). 2006. Natural Resources Conservation Service, Digital General Soil Map of U.S., dated July 5.

______. 2007a. Natural Resources Conservation Service, National Soil Survey Handbook, Title 430-VI.

______. 2007b. Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Kern County, California, Southeastern Part, CA 670, dated December 10.

______. 2008a. Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Antelope Valley area, CA675, California, dated January 3.

______. 2008b. Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Los Angeles County, California, West San Fernando Valley area, CA 676, dated January 3.

______. 2008c. Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Angeles National Forest area, CA776, California, dated January 8.

______. 2008d. Web Soil Survey. [online] http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.

United States Geological Survey. 1952a (Photorevised 1988). Newhall, California Quadrangle Map, 7.5 Minute Series.

______. 1952b (Photorevised 1988). Val Verde, California Quadrangle Map, 7.5 Minute Series.

______. 1957 (Photorevised 1974). Lake Hughes, California Quadrangle Map, 7.5 Minute Series.

______. 1958a (Photorevised 1974). Del Sur, California Quadrangle Map, 7.5 Minute Series.

______. 1958b (Photorevised 1974). Green Valley, California Quadrangle Map, 7.5 Minute Series.

______. 1958c (Photorevised 1974). Lancaster West, California Quadrangle Map, 7.5 Minute Series.

______. 1958d (Photorevised 1974). Ritter Ridge, California Quadrangle Map, 7.5 Minute Series.

______. 1958e (Photorevised 1974). Sleepy Valley, California Quadrangle Map, 7.5 Minute Series.

______. 1958f (Photorevised 1988). Warm Springs, California Quadrangle Map, 7.5 Minute Series.

______. 1958g (Photorevised 1988). Whitaker Peak, California Quadrangle Map, 7.5 Minute Series.

______. 1960a (Photorevised 1988). Agua Dulce, California Quadrangle Map, 7.5 Minute Series.

______. 1960b (Photorevised 1988). Mint Canyon, California Quadrangle Map, 7.5 Minute Series.

______. 1966 (Photorevised 1988). San Fernando, California Quadrangle Map, 7.5 Minute Series.

______. 1973. Rosamond, California Quadrangle Map, 7.5 Minute Series.

______. 1991. Lebec, California Quadrangle Map, 7.5 Minute Series.

______. 1997 (2002rev). National Seismic Hazard Mapping Project, http://earthquake.usgs.gov/hazards/.

______. 2008. Earthquake Ground Motion Parameter Java Application, Java Ground Motion Parameter Calculator – Version 5.0.8; http://earthquake.usgs.gov/research/hazmaps/design/

Wagner, H. M., Lander, E. B., Roeder, M. A., Prothero, D. R., and McDaniel, G. E., Jr. 2007. A new Irvingtonian land mammal assemblage from the Saugus Formation, Moorpark, Ventura County, California. Southern California Academy of Sciences Bulletin 106:141.

Wallace, R. E. 1940. Volcanic tuff beds of the Mint Canyon formation [M.S. thesis]. California Institute of Technology, Pasadena, California, 73 p.

______. 1949. Structure of a portion of the San Andreas rift in southern California. Bulletin of the Geological Society of America 60:781-806.

Welton, B. J. and Link, M. H. 1982. Vertebrate paleontology of the Ridge Basin. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 205-210.

Whistler, D. P. 1967. Oreodonts of the Tick Canyon Formation, southern California. PaleoBios 1:1-14.

White, D. R. 1983. Shoreface to lagoonal facies of the marine Pliocene lower Saugus Formation, northern Simi Valley, California. In, Squires, R. L. and Filewicz, M. V. (eds.), Cenozoic geology of the Simi Valley area, Southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section Book 35:207-220.

Wiese, J. H. 1950. Geology and mineral resources of the Neenach quadrangle, California. California Division of Mines Bulletin 153:1-53.

Winterer, E. L., and Durham, D. L. 1954. Geology of a part of the eastern Ventura basin, Los Angeles County. California Division of Mines Bulletin 170, Chapter 1, Map Sheet 5.

______. 1962. Geology of southeastern Ventura Basin, Los Angeles County, California. United States Geological Survey Professional Paper 334-H:275–366.

Young, D. R. 1982. Miocene molluscan paleontology of the Ridge Basin Group, Ridge Basin, southern California. In, Crowell, J. C., and Link, M. H. (eds.), Geologic history of Ridge Basin, southern California. Society of Economic Paleontologists and Mineralogists, Pacific Section, Field Trip Guidebook, p. 229-235.

Water Resources

BLM (U.S. Department of the Interior, Bureau of Land Management). 2008. Harris, Glenn (Natural Resource Specialist). Personal communication with POWER Engineers, Inc. July 31, 2008.

Briggs, Mark K. 1996. *Riparian Ecosystem Recovery in Arid Lands, Strategies and References*. Tucson, Arizona: The University of Arizona Press.

California Department of Water Resources. 2003. California's Groundwater, Bulletin 118.

______. Water Data Library. [online] http://www.water.ca.gov/waterdatalibrary/. Accessed January 2009.

California Regional Water Quality Control Board. 1995. Lahontan Region. *Water Quality Control Plan for the Lahontan Region*.

______. 1994. Los Angeles Region. *Water Quality Control Plan, Los Angeles Region*.

______. 2007. Los Angeles Region. *Watershed Management Initiative*.

County of Los Angeles. 1980. *County of Los Angeles General Plan*. Adopted November 1980.

Federal Emergency Management Agency (FEMA). *Title 44 – Emergency Management Assistance, Chapter 1, Part 60*. Accessed October 2008.

Kern County. 2007. *Kern County General Plan*. Adopted March 2007.

Los Angeles County Sanitation District (LACSD). 2004. *Final Environmental Impact Report for Lancaster Water Reclamation Plant 2020 Facilities Plan – Hydrology and Water Quality*.

______. 2005. *Final Palmdale Water Reclamation Plant 2025 Facilities Plan and EIR*.

______. 2009. [online] http://www.lacsd.org/default.asp. Accessed February 12, 2009.

POWER Engineers, Inc. (POWER). 2011. *Barren Ridge Renewable Transmission Project Water Resources Technical Report.*

Reid, L. M. 1993. Research and cumulative watershed effects General Technical Report PSW-141. Berkeley, Calif.: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 118 p.

USFS (U.S. Department of Agriculture, Forest Service). 2000. Pacific Southwest Region. *Water Quality Management for Forest System Lands in California: Best Management Practices.*

USFWS (U.S. Fish and Wildlife Service). 1976, 1983, 1985 – 1987, 2002. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. [online] http://www.fws.gov/wetlands.

Ventura County Watershed Protection District and Los Angeles County Department of Public Works (VCWPD and LACDPW). 2005. Santa Clara River Enhancement and Management Plan.

Western Regional Climate Center (WRCC). 2008. Western U.S. Climatological Data Summaries. [online] http://www.wrcc.dri.edu/climsum.html. Accessed October 2008.

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CHAPTER 10: ACRONYMS, ABBREVIATIONS AND GLOSSARY

ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
$\mu g/m^3$	Micrograms per Cubic Meter
AAQS	Ambient Air Quality Standard
AB	Assembly Bill
AB 32	Assembly Bill 32, the California Global Warming Solutions Act of 2006
AC	Alternating Current
ACEC	Area of Critical Environmental Concern
ACSR	aluminum conductor steel reinforced
ACSS/AW	aluminum conductor steel supported/aluminum-clad steel wire
ACSS/TW/HS	aluminum conductor steel supported/trapezoidal wires/high strength
af	Acre feet
AFB	Air Force Base
AGL	Above ground level
ALUC	Airport Land Use Commissions
ALUCP	Airport Land Use Compatibility Plan
AN	Audible noise
ANF	Angeles National Forest
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
AQAC	Air Quality Advisory Committee
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ATP	Antelope Transmission Project
AVAQMD	Antelope Valley Air Quality Management District
AVATP	Antelope Valley Area Trails Plan
AVEK	Antelope Valley – East Kern Water Agency
AVSD	Antelope Valley School District
AVTA	Antelope Valley Transit Authority
AWG	American Wire Gauge
BC	Back Country
BCMUR	Back Country Motor Use Restricted
BCNM	Back Country Non-Motorized
BEIG	Built Environment Image Guide
BLM	U.S. Department of the Interior, Bureau of Land Management
BMP	Best Management Practices
BOE	California State Board of Equalization
BOR	Bureau of Reclamation
BR-HC	Barren Ridge – Haskell Canyon Transmission Line
BR-RIN	Barren Ridge – Rinaldi Transmission Line

Abbreviation	Definition
BRRTP	Barren Ridge Renewable Transmission Project
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Prevention (Program)
Cal-EPA	California Environmental Protection Agency
Cal-OSHA	California Occupational Safety and Health Administration
CALTRANS	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CB	Critical Biological
CBC	California Building Code
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCD	Census County Division
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDE	California Department of Education
CDF	California Department of Forestry and Fire Protection
CDFG	California Department of Fish and Game
CDHS	California Department of Health Services
CDNPA	California Desert Native Plants Act
CDP	Census Designated Place
CDPH	California Department of Public Health
CDPR	California Department of Pesticide Regulation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act ("Superfund")
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CGS	California Geological Survey
CH_4	Methane
CHP	California Highway Patrol
CHSC	California Health and Safety Code
CIWMB	California Integrated Waste Management Board
CLADPR	County of Los Angeles Department of Parks and Recreation
CLAGP	County of Los Angeles General Plan
CLCA	California Land Conservation Act of 1965
CLWA	Castaic Lake Water Agency
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level

Abbreviation	Definition
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
COM Plan	Construction, Operation and Maintenance Plan
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CSC	California Species of Special Concern
CSD	Community Service District
CSLC	California State Lands Commission
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CWA	Clean Water Act
DAI	Developed Area Interface
dB	Decibel
dB(A)	A-weighted decibels
dBµV/m	Decibels above one microvolt per meter
DBH	Diameter at breast height
DC	Direct Current
DEM	Digital Elevation Model
DHS	Department of Health Services, California
DOC	California Department of Conservation
DoD	Department of Defense
DOI	U.S. Department of the Interior
DOT	Department of Transportation
DPR	Department of Parks and Recreation, California
DTSC	Department of Toxic Substances Control, California
DWR	California Department of Water Resources
EA	Environmental Assessment
EKAPCD	East Kern Air Pollution Control District
EDD	California Employment Development Department
EDR	Environmental Data Resources
EF	Experimental Forest
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMF	Electric and magnetic fields
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
ESA	Environmental Site Assessment

Abbreviation	Definition
EW	Existing Wilderness
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FLMP	Forest Land Management Plan
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FMU	Fire Management Unit
FPPA	Farmland Protection Policy Act
FPRP	Fire Prevention and Response Plan
FR	Forest Road
FRA	Federal Responsibility Area
FRAP	Fire and Resource Assessment Program
FRCC	Fire Regime Condition Classification
FSH	Forest Service Handbook
FSM	Forest Service Manual
FY	Fiscal Year
GAP	Gap Analysis Program
GCC	Global Climate Change
GDC	Ground Disturbance Category
GHGs	Greenhouse Gases
GIS	Geographic Information System
GPS	Global Positioning System
GWP	Global Warming Potential
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HIRA	High-Impact Recreation Area
HMBP	Hazardous Materials Business Plan
HMD	Hazardous Materials Division
HMMP	Hazardous Materials Management Plan
HSWA	Hazardous and Solid Waste Act
IEC/CISPR	International Electrotechnical Commission/the International Special Committee on Radio Interference
IEEE	Institute of Electrical and Electronics Engineers
IPCC	Intergovernmental Panel on Climate Change
IRP	Power Systems Integrated Resource Plan
KCFD	Kern County Fire Department
kcmil	Thousand circular mil (formerly MCM)
KCOG	Kern County Council of Governments
KCPD	Kern County Planning Department
KCSD	Kern County Sheriff's Department
KGRA	Known Geothermal Resource Area

Abbreviation	Definition
KOP	Key Observation Point
kV	Kilovolt
kV/m	Kilovolts per meter
L_{50}	Noise level exceeded 50% of the time
LAA	Los Angeles Aqueduct
LACDPW	Los Angeles County Department of Public Works
LACFD	Los Angeles County Fire Department
LACSD	Los Angeles County Sanitation District
LADWP	City of Los Angeles Department of Water and Power
LASD	Los Angeles County Fire Department, International Liaison and Employee Support Services
LASD	Los Angeles County Sheriff's Department
LCH	Lancaster Community Hospital
L_{dn}	Day-Night Average Sound Level
L_{eq}	Equivalent average sound level
LESA	Land Evaluation and Site Assessment
LMP	Land Management Plan
LORS	Laws, Ordinances, Regulations and Standards
LOS	Level of Service
LRA	Local Responsibility Area
LST	Lattice steel tower
LUST	Leaking Underground Storage Tank
mA	Milliamperes
MBTA	Migratory Bird Treaty Act
MCM	Thousand circular mil (see kcmil)
MDAB	Mojave Desert Air Basin
MFP	Management Framework Plan
mG	MilliGauss
mg/L	milligrams per liter
MIS	Management Indicator Species
MM	Mitigation Measure
MP	Milepost
MRCA	Mountains Recreation and Conservation Authority
MRZ	Mineral Resource Zone
MSDS	Materials Safety Data Sheet
MSHCP	Multiple Species Habitat Conservation Plan
mV/m	Millivolts per meter
MW	Megawatt
MWD	Metropolitan Water District of Southern California
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAIP	National Agriculture Imagery Program
NCCP	Natural Community Conservation Plan

Abbreviation	Definition
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code
NFMA	National Forest Management Act
NFP	National Fire Plan
NFS	National Forest System
ng/L	nanograms per liter
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOTAM	Notice to Airmen
NOx	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	National Resources Conservation Service (formerly Soil Conservation Service [SCS])
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units
NVUM	National Visitor Use Monitoring
NWI	National Wetland Inventory
O&M	Operations and Maintenance
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services, California
OHV	Off-highway vehicle
OML	Operational Maintenance Level
ORV	Off-road recreational vehicle
OSHA	Occupational Safety and Health Administration
P-C	Production-Consumption
PCA	Pest Control Advisor
PCT	Pacific Crest National Scenic Trail
PCTA	Pacific Crest Trail Association
PDCI	Pacific Direct Current Intertie
PEM	Palustrine Emergent
PEMB	Palustrine Emergent Saturated
PFO	Palustrine Forested
PFOA	Palustrine Forested Temporarily Flooded
pg/L	picograms per liter
PM_{10}	Particulate Matter with an Aerodynamic Diameter of 10 microns or less
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter of 2.5 microns or less
PMTP	Paleontological Resource Mitigation Plan
POD	Plan of Development

Abbreviation	Definition
POWER	POWER Engineers, Inc.
ppm	Parts per Million
PRC	California Public Resources Code
PRMC	Palmdale Regional Medical Center
PUB	Palustrine Unconsolidated Bottom
PUBFx	Palustrine Unconsolidated Bottom Permanently Flooded, Excavated
QP	Quasi-peak
R2	Lower Perennial Riverine
R4	Intermittent Riverine
RAREII	Roadless Area Review and Evaluation
RCA	Riparian Conservation Area
RCRA	Resource Conservation and Recovery Act
REA	Federal Lands Recreation Enhancement Act
REIS	U.S. Department of Commerce, Regional Information System
RETI	Renewable Energy Transmission Initiative
RI	Radio interference
RMC	San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
RMP	Resource Management Plan
RMS	Root mean square
RN	Radio Noise
ROCs	Reactive Organic Compounds
ROD	Record of Decision
ROG	Reactive Organic Gases
ROS	Recreation Opportunity Spectrum
ROW	Right(s)-of-way
RPS	Renewable Portfolio Standard
RW	Recommended Wilderness
RWQCB	Regional Water Quality Control Board
SAO	Santa Ana Occurrences
SB	State Bill
SC	Scenic Corridor
SCA	Special Conservation Area
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SEA	Significant Ecological Area
SF_6	Sulfur Hexafluoride
SHPO	State Historic Preservation Office
SIO	Scenic Integrity Objectives
SIP	State Implementation Plan
SMARA	State Surface Mining and Reclamation Action
SMS	Scenery Management System

Abbreviation	Definition
SO_2	Sulfur Dioxide
SO_X	Oxides of Sulfur
SNR	Signal to noise ratio
SPCC Plan	Spill Prevention, Countermeasure and Control Plan
SR	State Route
SRA	State Recreation Area
SRM	Specifically Recommended Mitigation
SS	Seldom Seen
SSURGO	Soil Survey Geographic
STIP	State Transportation Improvement Plan
SUA	Special-Use Authorization
SVOC	Semi-Volatile Organic Compounds
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
TCP	Traffic Control Plan
TDS	Total Dissolved Solids
TESP	Threatened, Endangered, and Special Status Plant (species)
TIP	Transportation Improvement Plan
TMDL	Total Maximum Daily Load
TRTP	Tehachapi Renewable Transmission Project
TSDF	Treatment, Storage, and Disposal Facility
TSP	Tubular steel pole
TVI	Television interference
TWRA	Tehachapi Wind Resource Area
UBC	Uniform Building Code
UNFCCC	United Nations Framework Convention on Climate Change
UPRR	Union Pacific Railroad
URBEMIS	Urban Emissions Model
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USDOT	U.S. Department of Transportation
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
v/c	volume to capacity
VAC	Visual Absorption Capacity
VOC	Volatile Organic Compound
VRM	Visual Resource Management System

Abbreviation	Definition
WA	Wilderness Area
WEAP	Worker Environmental Awareness Program
WEMO	West Mojave Plan
WUI	Wildland Urban Interface

GLOSSARY

Access (road)

Paved or unpaved road used for passage to and along transmission line for purposes of construction and maintenance.

ACSR

Concentrically stranded conductor composed of one or more layers of aluminum alloy wire stranded with a high-strength steel core. See conductor.

Aesthetic Quality

A perception of beauty of a natural or cultural landscape.

Affected Environment

A geographic area and the associated natural, human, and cultural resources that could be influenced by a Proposed Action or its Alternatives. Also, the chapter in an environmental impact statement that describes the existing condition of the environment.

Agency Preferred Alternative

The alternative that the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The concept of the "agency's preferred alternative" is different from the "environmentally preferable alternative," although in some cases one alternative may be both.

Alignment

The specific, surveyed route of a transmission line.

Alluvial Fan

A gradually sloping mass of alluvium (sand, clay, etc., deposited by moving water) that widens out like a fan from the place where a stream issues from a narrow mountain valley upon a plain or broad valley.

Alluvium

A general term for clay, silt, sand, gravel, or similar consolidated material deposited during comparatively recent geologic time by a stream or other body of running water in the bed of the stream, river, or floodplain, or as a cone or fan at the base of a mountain slope.

Alternative (action)

An option for meeting the stated need.

Alternative (route)

An optional path or direction for a transmission line.

Anthropogenic

Of, relating to, or resulting from the influence of human beings on nature.

Archaeology

The science that investigates the history of peoples by the remains belonging to the earlier periods of their existence.

Archival

Pertaining to or contained in documents or records that preserve information about an event or individual.

Area of Critical Environmental Concern (ACEC)

A Bureau of Land Management (BLM) designation for an area within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life from natural hazards.

Artifact

Any object showing human workmanship or modification, especially from a prehistoric or historic culture.

Background

That portion of the visual landscape lying from the outer limit of the middleground to infinity (beyond three miles). Color and texture are subdued in this area, and visual sensitivity analysis here is primarily concerned with the two-dimensional shape of landforms against the sky.

Batch Plant Site

An area used for concrete mixing, temporary field office facility, material storage, and stations for equipment maintenance during construction of the transmission line. The area usually covers approximately two acres.

Best Management Practices

A practice or combination of practices that are determined to be the most effective and practicable (including technological, economic and institutional considerations) means of controlling point and non-point pollutants, at levels compatible with environmental quality goals.

BLM Right of Way Grant

This grant would authorize the construction, maintenance, and operation of the proposed transmission lines (and ancillary improvements) traversing public lands administered by the BLM in accordance with BLM right-of-way regulations and other applicable federal laws and policies.

Block Group

A block group is a combination of census blocks (the smallest geographic area for which the Bureau of the Census collects). The block group is the smallest geographic entity for which the decennial census tabulates and publishes sample data.

Bundled conductor

Two or more conductors, closely spaced in parallel, combine to form a phase. They are often used to increase the amount of current carried by a transmission line.

Bus

A conductor or group of conductors that serves as a common connection for two or more circuits, and is used to interconnect equipment of the same voltage.

Bus Support Structures

An assembly of bus conductors with associated connection joints and insulating supports.

Buswork

A combination of bus structures.

Capacity

The maximum load that can be generated or transmitted by generation or transmission facilities for a given period of time without exceeding approved limits of temperature or stress (measured with the pascal [PA]).

Centerline

A line along the approximate middle of a transmission line right-of-way.

Circuit

A complete closed conducting path over which electric current may flow.

Circuit Breaker

A switching device capable of making, carrying and interrupting currents under normal circuit conditions. The medium in which circuit interruption is performed may be designated, as in oil circuit breaker, air-blast circuit breaker, gas or sulfur hexafluoride circuit breaker, or vacuum circuit breaker.

Conductor

1) Any metallic material, usually in the form of wire, cable or bar, suitable for carrying an electric current; 2) The wire cable strung between transmission towers through which the electrical current may flow. May be aluminum, bundle, expanded, non-specular, single or stranded conductor.

Contrast

The effect of a striking difference in the form, line, color or texture of an area being viewed.

Contrast Rating

A method of determining the extent of potential visual impact for an existing or proposed activity that would modify any landscape feature (land and water form, vegetation and structures).

Corona

The discharge of sound energy from an energized transmission line that occurs when the voltage gradient exceeds the breakdown strength of air. Corona discharge can also produce energy that can usually be visible as a soft, purple glow.

Corridor

A continuous strip of land of defined width through which a linear utility route (or routes) passes.

CRP Lands

Farmlands for which a landowner receives an annual payment and cost-share assistance to establish long-term, resource-conserving vegetative covers. Administered by the U.S. Farm Service Agency.

Cultural Resources

Fragile and non renewable remains of human activities, occupations, and endeavors as reflected in sites, buildings, structures or objects, including works of art, architecture and engineering.

Cumulative Effect

The incremental environmental impact or effect of the proposed action, together with impacts of past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. .

Cumulative Impacts

Two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts.

Cumulative Projects

Present and reasonably foreseeable future actions in the vicinity of the Project that have the potential to combine with the Proposed Action or Alternatives and cause cumulative impacts or cumulative effects.

Cumulatively Considerable Impacts

Incremental impacts of an individual project that are significant when viewed in connection with the impacts of past, current, and probable future projects pursuant to CEQA.

Current

The flow of electricity. A voltage will always try to drive a current. The size current that is driven depends on the amount of electric charge flowing past a specified point per unit time and the resistance of that circuit.

dB(A)

Stands for A weighted decibels. This decibel scale is used to approximate the way human hearing responds to some frequencies more than others.

Dead-end Structure

Transmission line tower structures that are more robust than tangent structures, used (1) to add longitudinal strength to the line, (2) at turning points (angles), (3) for added safety at crossings of other utilities such as other transmission lines and roads, and (4) to interrupt long distances of suspension structures that would otherwise provide more exposure to catastrophic line failure over long distances.

Debris Flow

A moving mass of loose mud, sand, soil, rock and water that travels down a slope under the influence of gravity. To be considered a debris flow, at least 50 percent of the material must be sand-sized particles or larger. A debris flow deposit is the resulting material deposited by the flow (Geology.com 2010).

Delta Configuration

They physical geometry of power line conductors that resemble the Greek letter “Delta” (an equilateral triangle).

Disconnect Switch

A power system switch, manually or motor operated, used for changing connections in a circuit (open or closed) or for isolating a circuit or piece of equipment from the source of power. Also called a disconnecting switch.

Distance Zone

A visibility threshold distance where visual perception changes. The zones are usually defined as foreground, middleground, background, and seldom seen.

Easement

A general term for a limited right to make use of a property owned by another party.

Electric Fields

Produced by voltages, irrespective of how much current is flowing and indeed whether any current is flowing at all. The electric field is the region around a conductor where a force will be experienced by a charge.

Electric and Magnetic Fields (EMFs)

Electric and magnetic fields. Sometimes also defined as electromagnetic fields, which usually means the same thing.

Electric Transmission Grid

A grid that moves power from many different generating plants to customers and their electric loads.

Electromagnetic Interference

High frequency electrical noise that can cause radio and television interference.

Emergent Wetland

Any area of a vegetated wetland where non-woody vegetation (e.g. cattail, grasses, sedges) comprises at least 30 percent areal cover.

Environmental Effect

Any change that an action may cause in the environment, including biological resources, land use, health and socioeconomic conditions, cultural heritage, geology and paleontology.

Environmental Justice Communities

Disadvantaged communities, including low income and minority populations.

Environmental Justice

Evaluation of potential disproportionately high and adverse impacts on low income and/or minority populations that may result from a Proposed Action or its Alternatives.

Ephemeral Drainage

A stream or stream segment that flows only briefly in response to local precipitation and has no base flow.

Erosion

Wearing away of soil and rock by weathering and the actions of surface water, wind, and underground water.

Farmland of Statewide Importance

Land that is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. Criteria for defining and delineating this land are determined by the appropriate State agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of corps when treated and managed according to acceptable farming methods.

Federal Energy Regulatory Commission (FERC)

Agency primarily responsible for ensuring adequate energy supplies at just and reasonable rates and providing regulatory incentives for increased productivity, efficiency, and competition.

Federal Land Policy and Management Act of 1976 (FLPMA)

Public Law 94-579 signed by President Gerald Ford on October 21, 1976. Established public land policy for lands administered by the Bureau of Land Management (BLM). FLPMA specifies several key directions for the BLM, notably (1) management on the basis of multiple-use and sustained yield, (2) land use plans prepared to guide management actions, (3) public lands retained in Federal ownership, and 4) public participation used in reaching management decisions.

Floodplain

That portion of a river or stream valley, adjacent to the river channel, which is built of sediments and is inundated with water when the stream overflows its banks.

Foreground

The visible area from a viewpoint or use area out to a distance of one-half mile. The ability to perceive detail in a landscape is greatest in this zone.

Fossil

The remains or traces of an organism or assemblage of organisms that have been preserved by natural processes in the earth's crust; exclusive of organisms that have been buried since the beginning of historical time.

Fragmentation

Fragmentation occurs whenever a large continuous habitat is transformed into smaller patches that are isolated from each other by both natural and human-induced mechanisms.

Fugitive Dust

A particulate emission made airborne by forces of wind, human activity, or both. Unpaved roads, construction sites, and tilled land are examples of areas that originate fugitive dust.

Geothermal

Geothermal or "earth heat" is found in the form of steam or hot water reservoirs, and even in hot rocks. When the geothermal reservoir is at a moderate temperature, this resource is used to produce the heat distributed in a heating network. When the temperature of the geothermal reservoir is higher, it can be used to produce steam to generate electricity.

Greenhouse Gas (GHG)

GHG is a collective term for those gases that adsorb and trap heat in the earth's atmosphere, and thus contribute to global warming and climate change. The greenhouse gases most commonly used in calculations of global warming potential include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Ground Wire

Two wires installed along the transmission line at the top of the tower structures to protect the conductors from lightning strikes by transferring the energy from the lightning through the ground wires and structures into the ground below.

Habitat

The region where a plant or animal naturally grows or lives. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and home range.

Herbicide

An herbicide is a substance used to kill unwanted plants. Selective herbicides kill specific targets while leaving the desired crop relatively unharmed. However, herbicides may harm or kill desirable native vegetation occurring close to or even downstream from the targeted weeds. Additionally, herbicides may be detrimental to wildlife species such as amphibians, or may negatively impact water quality.

Hydroelectric

Of or relating to or used in the production of electricity by hydropower (power that is derived from the force or energy of moving water).

Impact

A modification in the status of the environment brought about by a Proposed Action or its Alternatives.

Impact Zone

The study area in which data are collected during the baseline study in order to make a determination of the impacts from construction, operation, maintenance, or decommissioning of a proposed facility or associated facility at preferred and reasonable alternative locations.

Indirect Impact

An effect that is related to, but removed from, a Proposed Action or its Alternatives by an intermediate step or process.

Infrastructure

The basic facilities on which a community depends, such as schools, power plants, or transportation and communication systems.

Insulators

A device, made of porcelain or polymer, that prevents energized conductors from contacting each other. They also prevent conductors from energizing structures or facilities that are not designed to carry electricity. Bushings, a type of hollow insulator with a conductor inside, are required where wires enter buildings or electrical devices, like transformers or circuit breakers, to insulate the wires from the case. Insulators are also required at the point of support between electric power transmission lines and utility poles or transmission towers.

Intermittent Stream

A stream that flows in a well-defined channel in response to precipitation and is dry for part of the year.

Kcmil

A practical unit of a small circular area , which is 1,000 circular mils. The circular mil is the area of a circle with a diameter of one mil (one thousandth of an inch). It is a common unit for referring to the area of the cross section of a wire or cable.

Kilovolt (kV)

One kilovolt equals 1,000 volts. The volt is the unit for measuring electrical potential or "pressure".

Kilovolt ampere (kVA)

The practical unit of apparent power, which is 1,000 volt-amperes. The volt-amperes of an electric circuit are the mathematical products of the voltage and amperes of the current.

Kilovolt per Meter (kV/m)

A unit measure of electric field strength.

Kilowatt (kW)

The electric unit of power equal to 1,000 watts.

Kilowatt-Hour (kWh)

The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit for one hour.

Landform

A term used to describe many types of land surfaces that exist as a result of geologic activity and weathering (e.g., plateaus, mountains, plains and valleys).

Landscape Character Type

The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color and texture. These factors give the area a distinct quality that may distinguish it from immediate surroundings.

Lead Agency

The public agency that has the principal responsibility for carrying out or approving a project. The agency or agencies responsible for preparing the environmental impact statement/report (40 CFR 1508.16).

Link

A segment of a route alternative sharing common endpoints with adjacent links. Endpoints of a link are determined by the location of intersection with other segments (links) of other routes.

Load

The amount of electric power delivered or required at any specified point or points on a system. Load originates primarily at the power consuming equipment of the customer (residential, commercial, or industrial).

MVA

Megavolt-ampere.

Megawatts (MW)

Megawatts, the electrical unit of power that is equal to 1,000 kilowatts or 1,000,000 watts.

Micropiling

The placement of micropiles. Simply defined, micropiles are high performance, high capacity, small diameter (2 to 15 inch) - drilled and grouted in-place piles (supports) - designed with a centrically placed steel reinforcing member consisting of single (or multiple) bars, and used primarily to resist structural loading. They can be placed with relatively small drilling equipment, single piles or in pile groups, in areas of limited access or restricted headroom and with minimal impact to existing surrounding structures.

Microwave

A very short electromagnetic wave (wavelength ranges from 1 mm to 30 cm).

Middleground

The area visible from a travel route, residence or other use area to a distance of three miles. The outer boundary of this zone is defined as the point where texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.

Migratory

Birds, animals or people that migrate, or move from one region of the country to another.

Milliampere (mA)

Measure of electric current induced in conductive material within an electric field.

Milligauss (mG)

A unit of measure for magnetic fields.

Mitigate

To alleviate, reduce or render less intense or severe.

Mitigation

An action to avoid, minimize, reduce, eliminate, replace or rectify the impact of a management practice.

National Environmental Policy Act of 1969 (NEPA)

Public Law 91-190, 42 USC Section 4321 *et seq*. Establishes environmental policy for the nation. This act requires federal agencies to evaluate the environmental effects of Proposed Actions and their Alternatives.

National Register of Historic Places (NRHP)

A listing of architectural, archaeological, and cultural sites of local, state, or national significance, established by the Historic Preservation Act of 1966 and maintained by the National Park Service.

Noxious Weed

Exotic (non-native) species of plants that proliferate and reduce the value of land for agriculture, forestry, livestock, wildlife or other beneficial uses.

One-hundred-year Flood

A flood of magnitude that has an estimated probability to occur once every one hundred years. A 1-in-100 chance of a certain floodplain area being inundated during any year.

Paleontology

The science that deals with the life of past geological ages through the study of the fossil remains or organisms.

Phase

1) A conductor or conductors or piece of electrical equipment that is associated with one of three separate phases of an alternating-current power system, designated A-phase, B-phase and C-phase; 2) the stage or progress of a cyclic movement such as a current or voltage wave.

Physiographic Province

An area characterized by distinctive topography, geologic structure, climate, drainage patterns and other features and phenomena of nature.

Prey

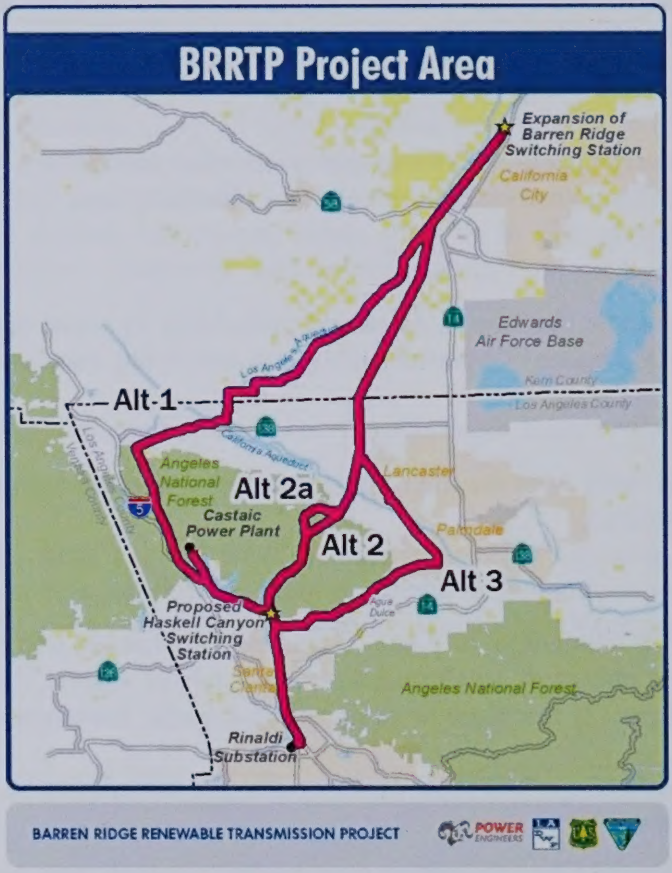
An animal hunted or killed for food by another animal.

Prime Farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses (prime farmland could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods.

Project Area

The geographic location of the BRRTP, extending across multiple jurisdictions, that was examined in determining potential environmental impacts.


BRRTP Project Area
Expansion of Barren Ridge Switching Station
California City
Edwards Air Force Base
Kern County
Los Angeles County
Los Angeles Aqueduct
California Aqueduct
Alt-1
Alt 2a
Alt 2
Alt 3
Angeles National Forest
Castaic Power Plant
Lancaster
Palmdale
Agua Dulce
Los Angeles County
Ventura County
5
14
58
138
126
Proposed Haskell Canyon Switching Station
Santa Clarita
Angeles National Forest
Rinaldi Substation
BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
POWER ENGINEERS

Proposed Action

A plan that contains sufficient details about the intended actions to be taken, or that would result, to allow alternatives to be developed and its environmental impacts analyzed (40 CFR 1508.23).

Radio Noise

Interference produced by transmission line corona that includes Radio Interference (RI) and Television Interference (TVI). RI refers to interference primarily in the 535 to 1605 kilohertz (kHZ) frequency range, and TVI refers to interference in the 54 to 88 megahertz (MHz) frequency range.

Raptor

A bird of prey.

Reclamation

Returning disturbed lands to a form and productivity that would be ecologically balanced.

Reconductoring

To replace the cable or wire on an electric circuit, typically a high-voltage transmission line, usually to afford a greater electric-current-carrying capability.

Reliability

Electric system reliability has two components – adequacy and security. Adequacy is the ability of the electric system to supply to aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and unscheduled outages of system facilities. Security is the ability of the electric system to withstand sudden disturbances, such as electric short circuits or unanticipated loss of system facilities. The degree of reliability may be measured by the frequency, duration, and magnitude of adverse effects on consumer services.

Renewable Resource

A natural resource that can renew or replace itself by natural processes and, therefore, with proper management, can be harvested indefinitely. These resources include biofuels and waste, geothermal, hydroelectric, radiation from the sun (solar), and wind.

Rift Zone

A system of depressions in the ground between the parallel faults that make up a fault zone.

Right(s)-of-Way (ROW)

The right(s) to pass over property owned by another. The strip of land over which facilities such as railways, railroads, pipeline, or power lines are built.

Record of Decision (ROD)

The document that is prepared to substantiate a decision based on an EIS. The ROD states the final agency decisions, identifies the alternatives considered and discusses mitigation, enforcement and monitoring commitments.

Scoping

An early and open process for determining the scope of issues to be addressed in an environmental impact statement/report (EIS/EIR) and for identifying the significant issues related to a Proposed Action or its Alternatives.

Shield Wire

A protective wire strung above the conductors on a transmission line to shield the conductors from lightning; also called a ground wire, overhead ground wire, or overhead earth wire.

Significant Effect on the Environment

Under CEQA, a "significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (CEQA Guidelines Section 15382). The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the lead agency involved, based to the extent possible on scientific and factual data. The lead agency shall consider direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment that may be caused by the project.

"Significant" as used in NEPA analysis requires considerations of both context and intensity (40 CFR 1508.27).

Special-Status Species

Those plants or animals that have a protective status (rare, threatened, or endangered) designated by a state or federal agency because of general or localized population decline.

Staging Area

A construction yard required for the storage of materials, construction equipment, construction vehicles, and temporary construction offices.

Substation

An installation that accomplishes one or more of the following:

- voltage changed from one level to another level;
- voltage regulated to compensate for system voltage changes;
- electric transmission and distribution circuits switched into and out of the system;
- electric power flowing in the transmission and distribution circuits measured; and
- communication signals are connected to the circuits.

Switching Station

An installation that provides utility companies with the ability to connect and disconnect transmission lines, or other components, to and from an electrical system. Switching stations allow for electrical energy to be redirected in order to perform maintenance and upgrades to an electrical system without disrupting service.

System Reliability

The ability of a power system to provide uninterrupted service.

Tackifiers

Chemical compounds (usually consisting of plant based products, as well as polymeric emulsion blends) used to treat soil surfaces during activities such as excavation, grading, and trenching to reduce or prevent water- and wind-related erosion and conserve soil moisture.

Transformer

A device for transferring electrical energy from one current to another by magnetic induction, usually between circuits of different voltages. It consists of a magnetic core on which there are two or more windings. In power systems, mostly used for changing voltage levels.

Transmission Capacity

The maximum load, measured as megawatt-miles divided by megawatt-demand, that a transmission line or network of transmission lines is designed to carry.

Transmission Lines

High voltage electric conductors used for bulk movement of large volumes of power across relatively long distances.

Unique Farmland

Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

VAR

Voltamperes reactive. The unit of measurement of reactive power in a circuit. Equal to the product of volts and amperes 90 degrees out of phase (KVAR = kilovar or 1,000 var; MVAR = megavar or 1,000 kilovar).

Viewshed

The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Volt

A unit of electrical pressure. It measures the force or push of electricity. Volts represent pressure, correspondent to the pressure of water in a pipe. A volt is the unit of electromotive force or electric pressure analogous to water pressure in pounds per square inch. It is the electromotive force which, if steadily applied to a circuit having a resistance of one ohm, will produce a current ampere.

Volt-amperes

The volt-amperes of an electric circuit are the mathematical products of the voltage and amperes of the current.

Voltage

Measure of the force of moving energy.

Watt

The electric unit of power or rate of doing work. One horsepower is equivalent to approximately 746 watts.

Wetlands

Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3(b)).

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CHAPTER 12: CHANGES BETWEEN THE DRAFT AND FINAL EIS/EIR

12.1 INTRODUCTION

Various changes were made to the Barren Ridge Renewable Transmission Project (BRRTP or Project) Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) to develop this Final EIS/EIR. These changes were made to provide updates to the document to reflect current Project status and in response to comments received during the public review of the Draft EIS/EIR as described in Chapter 7 of this Final EIS/EIR and in Appendix R, Draft EIS/EIR Comments and Responses.

This chapter documents all changes made to the Draft EIS/EIR for the development of this Final EIS/EIR. Chapters 0 through 11 of the Final EIS/EIR do not display in-line documentation of the additions, deletions, or modifications of text, figures, or tables made to the Draft EIS/EIR. Specific changes to text, figures, or tables are documented within this chapter. This chapter, Chapter 12, was not part of the Draft EIS/EIR and has been added to this Final EIS/EIR as a way for the reader to understand the changes between the Draft and Final EIS/EIR.

Only those portions of appendices or full appendices that required updates are printed with this Final EIS/EIR. Resource-specific technical reports, contained in Volumes III and IV of the Draft EIS/EIR, were developed to inform the analysis contained in the Draft EIS/EIR and have not been updated or reprinted.

The appendices were modified or added in the development of this Final EIS/EIR as described below.

The following appendices are new appendices that were not previously included in the Draft EIS/EIR and are printed in full with this Final EIS/EIR:

- Appendix R, Draft EIS/EIR Comments and Responses
- Appendix S, Mitigation Monitoring and Reporting Plan

The following appendices have been updated from draft to final form and are printed in full with this Final EIS/EIR:

- Appendix H: Biological Assessment
- Appendix I: Biological Evaluation / Management Indicator Species Report
- Appendix J: Weed Risk Assessment
- Appendix N: Air Conformity Determination
- Appendix O: Programmatic Agreement
- Appendix Q: Avian Protection Plan (Construction)

The following appendix has been not been updated but is printed in full with this Final EIS/EIR:

- Appendix B: Alternatives Development Report

Portions of the following appendices were modified and are printed with this Final EIS/EIR as follows:

- Appendix D: Regulatory Framework. New and/or updated information was added to Section D.2, Common to all Resources, Section D.10, Traffic and Transportation, and Section D.16, Biological Resources. Only the additional information in Sections D.2, D.10, and D.16 is printed with this Final EIS/EIR.
- Appendix F: Data Tables. New data tables for Environmental Justice analysis were added. Only the new data tables are printed with this Final EIS/EIR.
- Appendix L: Photo Simulations. New photo simulations of the Green Valley Multi-Line Relocation Alternative were added. Only the new simulations are printed with this Final EIS/EIR.
- Appendix P: EIS/EIR Distribution Lists. The distribution list for the Final EIS/EIR was added. Only the distribution list for the Final EIS/EIR is printed with this Final EIS/EIR.

Full versions of the above-listed modified appendices are available for review at http://www.ladwp.com/barrenridge.

The following appendices and supporting documents were not modified and are not printed with this Final EIS/EIR. They are considered to be part of this Final EIS/EIR and are available for review at http://www.ladwp.com/barrenridge.

- Appendix A: Notice of Intent; Notice of Preparation; Federal Register Notice
- Appendix C: Switching Station Preliminary Plans
- Appendix E: Electric and Magnetic Fields Management Plan
- Appendix G: Biological Resources Occurrence Tables
- Appendix K: TrackInfo Services FirstSearch Reports
- Appendix M: Electrical Effects Data Tables
- Resource-Specific Technical Reports (Volumes III and IV of the Draft EIS/EIR)
- Maps Volume (Volume V of the Draft EIS/EIR)

12.2 MODIFICATIONS TO THE DRAFT EIS/EIR

Throughout this document, references to the Draft EIS/EIR were updated to read Final EIS/EIR, as appropriate, and other minor editorial edits or corrections were made. Other substantive modifications made to the Draft EIS/EIR in the development of this Final EIS/EIR are described below.

12.2.1 SUMMARY

On pages S-16 and S-17, information was added to Table S-4 to include the number of miles crossed by each Alternative of areas containing known federal and State Endangered Species Act (ESA)-listed species and their habitat, as well as federal and State ESA-listed plants and sensitive vegetation communities.

12.2.2 CHAPTER 1

On page 1-11 in Section 1.2.4, text was added to clarify the capacity of the Barren Ridge to Rinaldi (BR-RIN) transmission line and its capability of handling additional load of planned generation projects, and to explain that no changes to the Proposed Action would be anticipated if planned projects do not occur. Additional text explains the Los Angeles Department of Water and Power's (LADWP's) process for approving generator interconnection to BRRTP.

On page 1-23, Table 1-1 was edited to include the following:

Triggering Action	Permit/Approval	Accepting Authority/ Approving Agency	Statutory Reference
STATE OF CALIFORNIA			
Proposed construction, operation, or maintenance may include a utility crossing over State Water Project facilities or work within a Department of Water Resources right-of-way	Encroachment Permit	California Department of Water Resources	California Public Resources Code, Section 12899.1

12.2.3 CHAPTER 2

On page 2-1 in paragraph 1, "that would feasibly attain most of the basic objectives of the Project" was deleted from the text.

On page 2-4 in paragraph 3, "create a new" was deleted and replaced with "run outside of existing" was inserted into the text.

On page 2-5 in paragraph 3, "that would feasibly attain most of the basic objectives of the Project" was deleted from the text.

On page 2-11 in Table 2-1, the term "blue-line" was deleted from row 4 (Water Resources) and replaced with "intermittent and ephemeral."

On page 2-13 in paragraph 1, "that would feasibly attain most of the basic objectives of the Project" was deleted from the text.

On page 2-31, a new section, including supporting figures and tables, was inserted into the document (Section 2.3.5: New Alternatives Considered in Response to Comments on the Draft EIS/EIR).

On page 2-52 in paragraph 1, information regarding the potential use of private property for construction of the Haskell Canyon Switching Station was inserted into the text.

On page 2-63 in paragraph 2, text was inserted to clarify right-of-way (ROW) requirements for construction of the Haskell Canyon Switching Station and connection of transmission lines into the station.

On page 2-69 in paragraph 3, text was inserted to clarify Angeles National Forest (ANF) design standards for the Pacific Crest Trail.

On page 2-79 in paragraph 4, text was inserted to clarify the potential installation of spherical markers, as required by the Federal Aviation Administration (FAA).

On page 2-89, the footnotes of Table 2-7 were revised from the original document.

On page 2-96 in Table 2-8, text was inserted in GP-59 to include air quality and noise impacts; additionally, three new GPs, GP-60, GP-61, and GP-62, were inserted into the document.

On page 2-97 beginning in paragraph 1 and continuing through page 2-98, text was inserted to describe the interconnection process for approving generator interconnection to BRRTP.

On page 2-101 in paragraph 3, text was inserted to refer the reader to a representative list of cross-sections in Appendix L. Table ROW-1 (Width of Existing and Proposed LADWP ROW at Cross-Section Locations) was inserted into the document below paragraph 3.

On page 2-111 in paragraph 3, text pertaining to the consistency of Alternative 2a to Scenic Integrity Objective (SIO) standards was moved from its original place in the document. Also moved was the text in paragraph 4 regarding the Pacific Crest Trail and the text in paragraph 5 regarding Riparian Conservation Areas.

On page 2-117 in paragraphs 4, 5, and 6, text was inserted regarding the necessity of ANF Land Management Plan (LMP) plan amendments for the Project due to SIO inconsistencies with regards to the Pacific Crest Trail and Riparian Conservation Areas (text continues to the following page).

On page 2-122 in paragraph 4, the number of Riparian Conservation Areas (RCAs) crossed by Alternative 2 was increased from 21 to 66.

On page 2-126 in paragraph 1, the number of RCAs crossed by Alternative 3 was increased from 26 to 151.

On page 2-129 in paragraph 2, the number of RCAs crossed by Alternative 2a was increased from 25 to 94.

On page 2-132 in paragraph 1, “NFS” was deleted from the text, and the number of RCAs crossed by Alternative 1 was increased from “no RCAs” to “only six.”

On page 2-135 and continuing through page 2-136, the following changes were made in Table 2-11:

Table 2-11, deleted:

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private lands	2.2 0.1 Private (California Condor) 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known USFS Special Status Wildlife Species	0.0	0.1 0.1 USFS (Coastal Rosy Boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0

Table 2-11, inserted:

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
Fish and Wildlife Resources	*Total Miles Crossed with Known Federal and State Endangered Species Act (ESA) Listed Species*	4.2	3.7	3.7	3.7
	Miles Crossed with Known Federal and State ESA Listed Species on BLM lands	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	3.1 1.7 BLM (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known Federal ESA Listed Species on NFS lands	0.3 0.1 NFS (California Condor) 0.2 NFS/CDFG (California Condor)	0.0	0.0	0.0
	Miles Crossed with Known Federal and State ESA Listed Animal Species on Private lands	2.2 0.1 Private (California Condor) 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)	2.0 0.6 Private (Desert Tortoise) 1.4 BLM/Private (Desert Tortoise)
	Miles Crossed with Known USFS Special Status Wildlife Species	0.0	0.1 0.1 USFS (Coastal Rosy Boa) Potential habitat was observed as being present throughout the Forest during 2008-2010 surveys.	0.0	0.0
	Miles of Designated USFWS or CDFG Wildlife Habitats	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)	0.0 Reconductoring – 2.9 miles, 176 acres (Coastal California Gnatcatcher)
	Miles of Designated BLM Habitat	0.0	0.0.	0.0	0.0
	Miles of Designated NFS Habitat	4.4 NFS GIS modeled Habitat for the Arroyo Toad, Southwestern Willow Flycatcher, and Least Bell's Vireo	4.9 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	4.6 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback	1.0 NFS GIS modeled habitat for the Arroyo Toad, Southwestern Willow Flycatcher, California Red-legged Frog, Least Bell's Vireo, and Unarmored Threespine Stickleback
	Miles of Avian Risk	H – 6 M – 19 L – 58	H – 1 M – 7 L – 55	H – 1 M – 11 L – 53	H – 1 M – 11 L – 65
	Miles of Condor Risk	H – 6 M – 33 L – 46	H – 0 M – 10 L – 53	H – 3 M – 9 L – 53	H – 1 M – 25 L – 51
Vegetation	*Miles Crossed with Known USFS Sensitive Plants*	1.3 1.2 Short-joint Beavertail 0.1 Slender Mariposa Lily	3.2 1.2 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	3.1 1.1 Short-joint Beavertail 1.7 Slender Mariposa Lily 0.3 Slender Mariposa Lily & Short-joint Beavertail	1.2 1.1 Slender Mariposa Lily 0.1 Slender Mariposa Lily & Short-joint Beavertail

Issues or Concerns		**Proposed New 230 kV Double-Circuit Transmission Line For Each Action Alternative**			
		Alternative 1	**Alternative 2 Proposed Action**	**Alternative 2a[1]**	**Alternative 3**
	Miles Crossed with Known Federal and State Threatened, Endangered, Candidate, and Proposed Plant (TECP) Species	0.0	0.0	0.0	0.0
	Miles Crossed with Known Federal Special-status Plant Species on Private lands	0.0	0.0	0.0	0.0
	Acreage of Riparian Vegetation Crossed	136 acres	126 acres	119 acres	154 acres
	Acreage of Joshua Tree Woodland Crossed	334 acres	320 acres	320 acres	320 acres
	Acreage of Riversidian Sage Scrub Crossed	448 acres	92 acres	92 acres	770 acres
	Number of Riparian Conservation Areas (RCA) Crossed	151	66	94	6
	Acres of RCA within 500-foot Corridor	99.5 acres	70.9 acres	87.6 acres	0.6 acres
	Miles with Noxious Weeds or Invasive Species Identified within 500 ft. Corridor during BRRTP Botanical Surveys	1.4	3.6	2.9	0. 1

12.2.4 CHAPTER 3

On page 3-4 in Section 3.2.1, a description of respirable particulate matter (PM_{10}), fine particulate matter (PM_{25}), and toxic air contaminants (TACs) was added to explain their potential adverse health effects.

On page 3-103, in paragraph 6, the following sentence was inserted to clarify the sensitivity of the viewpoint for San Francisquito Creek: "Although still being covered in the analysis, a sensitive viewpoint for (San Francisquito Creek, eligible as a Wild and Scenic River,) was (not) established (by the ANF) because the Outstandingly Remarkable Values are neither for Scenery nor Recreation, and public access to the Creek is very limited."

On page 3-148, in paragraph 4, the scientific names of arroyo toad, California red-legged frog, California spotted owl, Joshua tree, desert tortoise, and Mohave ground squirrel were added to the text.

On page 3-149 in paragraph 3, text was added to clarify methodology used for mapping and description of vegetation communities. In Table 3.3.1-1, the vegetation community "Grassland" was changed to "Non-native Grassland" for clarity.

On page 3-150 in paragraph 1, the following sentence was inserted: "Of these thirty-five special-status wildlife species and sixty-eight special-status plant species, there are thirteen wildlife and four plant species with potential to occur within the Project area that are listed, or candidates for listing, at the State and/or federal level; and one additional plant species categorized as 'state rare' that has potential to occur."

On page 3-151 in paragraph 1, the species kit fox (*Vulpes macrotis*) and golden eagle (*Aquila chrysaetos*) were removed from the text.

On page 3-153, a description and discussion of biological soil crusts were added to the text.

On page 3-154 in paragraph 6, the scientific names for slender mariposa lily, short-joint beavertail, and Peirson's morning-glory were added to the text.

On page 3-155 in paragraph 2, the number of special-status plant species that are likely to occur within the new 230 kV circuit corridor was changed from 15 to 13, and the following species were removed from the list: short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) and slender mariposa lily (*Calochortus clavatus* var. *gracilis*). In paragraph 4, the scientific name for California condor was added to the text.

On page 3-156, three species were added to the list of special-status wildlife species that may be present within one mile of the new 230 kV circuit impact corridor; in addition, scientific names of all species listed were added to the text. A brief discussion of an avian risk assessment and results was added as paragraph 3. In paragraph 4, the following text was deleted: "Because the reconductoring corridor from the Barren Ridge Switching Station to the proposed Haskell Canyon Switching Station is identical to the proposed 230 kV transmission line corridor for Alternative 2 analyzed in detail below, this analysis focuses only on the reconductoring section between the proposed Haskell Canyon Switching Station and the existing Rinaldi Substation."

On page 3-157 in paragraph 2, two species were added to the text: California sagebrush (*Artemisia californica*) and black sage (*Salvia mellifera*). Paragraph 3 was corrected to read "Two special-status plant species were within the reconductoring corridor during the surveys conducted in 2008, 2009, and 2010 (POWER 2011): Short-joint beavertail (84 individuals), Slender mariposa lily (4,081 individuals)." In paragraph 3, the number of special-status plant species that are likely to occur within the corridor was expanded from 19 to 59, and the additional species were added to the text.

On page 3-158 the following text was added: "Based on the presence of recorded occurrences, the following wildlife species are believed to occur immediately within the impact corridor of the reconductoring corridor: American badger (*Taxidea taxus*), desert tortoise (*Gopherus agassizii*), coastal California gnatcatcher (*Polioptila californica californica*)."

The following text was inserted as paragraph 3: "Special-status wildlife species are believed to be present within one mile of the corridor, or to have the potential to occur within it, but were not located during surveys. This is based on known occurrence locations and/or the availability of suitable habitat. These species include:"

On page 3-159 a list of species was inserted in support of the previous paragraph (paragraph 3 of page 3-158). In paragraph 2, the scientific name for the coastal California gnatcatcher was inserted into the text; inserted as paragraph 3 is a brief discussion of an avian risk assessment and the results of the assessment.

On page 3-160, text was inserted in paragraph 2 to briefly explain results of botanical surveys within the footprint of the Haskell Canyon Switching Station. In paragraph 3, the number of special-status plant species with potential to occur within the switching station footprint was increased from 15 to 58, and the names of these species were inserted into the text. Text incorrectly stating that not all of the footprint could be surveyed was deleted.

On page 3-162 in paragraph 1, the number of special-status wildlife species potentially occurring in the footprint of the Haskell Canyon Switching Station was increased from three to four, and the additional species were added to the list. A brief discussion of an avian risk assessment and results was added as paragraph 2.

On page 3-163, scientific names for desert tortoise, Mohave ground squirrel, desert kit fox, and burrowing owl were added to the text. In paragraph 1, text was added to clarify methodology used for mapping and description of vegetation communities. Additionally, detail was added to clarify the shrubs and cacti that dominate the vegetation type at the Barren Ridge Switching Station.

On page 3-164, the two special-status wildlife species potentially located within the footprint of the Barren Ridge Switching Station were inserted into the text, and a brief discussion of an avian risk assessment and results was added as paragraph 1. In paragraph 3, "desert salt brush" has been deleted and replaced with "Mojave creosote bush scrub and Mojave wash scrub."

On page 3-165 in paragraphs 2 and 3, the text was edited to provide clarification regarding the vegetation communities mapped along the Alternative 1 transmission line corridor. A short description of locations of biological soil crusts was inserted as paragraph 4. In paragraph 5, the number of individual short-joint beavertail plants was increased from 26 to 49, and the number of individual slender mariposa lily plants was increased from 11 to 28.

On pages 3-166 and 3-167, the list of special-status plants with potential to occur in the new 230 kV transmission impact corridor was alphabetized.

On page 3-167 in paragraph 1, the scientific names of non-native and invasive plant species have been deleted from the text. Paragraph 3 lists three special-status wildlife species known to occur with the Alternative 1 impact corridor. A brief discussion of potential coastal California gnatcatcher habitat and potential for occurrence of this species was inserted as paragraph 4. A list of additional special-status wildlife species believed to be present was inserted as paragraph 5.

On page 3-168, a brief discussion of an avian risk assessment and results was added as paragraph 1.

On page 3-169 in paragraph 2, some scientific names were deleted and detail was inserted to clarify the vegetation types that occur along Alternative 2. A short description of locations of biological soil crusts was inserted as paragraph 3, and a list of the two special-status plant species known to occur within the Alternative 2 transmission corridor was inserted as paragraph 4.

On page 3-170, a list of special-status plant species with potential to occur within the Alternative 2 transmission line corridor was inserted.

On pages 3-171 and 3-172, the scientific names of special-status wildlife species have been inserted into the text.

On page 3-173, a brief discussion of an avian risk assessment and results was added as paragraph 1. In paragraph 2, the scientific names of several species were inserted into the text.

On page 3-174 in paragraph 2, "desert salt brush" was deleted and replaced with "Mojave creosote bush scrub and Mojave wash scrub."

On page 3-175, more specific information regarding the vegetation types occurring along Alternative 2a was inserted into paragraph 1, and information regarding the location of biological soil crusts was inserted as paragraph 2. In paragraph 3, the scientific names of short-joint beavertail and slender mariposa lily were inserted, as well as the number of individual plants known to occur along the impact corridor; and in paragraph 4, the number of special-status plant species potentially present was increased from 58 to 61 and the additional species were inserted into the text.

On page 3-177, special-status wildlife species known or believed to be present within the impact corridor of Alternative 2a was moved from page 3-174 and inserted into the text.

On page 3-178, a brief description of an avian risk assessment and results was added as paragraph 1. In paragraph 2, the scientific names of several species were inserted into the text.

On page 3-179, more specific information regarding the vegetation types occurring along Alternative 3 was inserted into paragraph 3, and some scientific names were deleted from the text.

On page 3-180, a short description of locations of biological soil crusts was inserted as paragraph 1. Special-status wildlife species were deleted from the text and moved to page 3-181.

On page 3-181, special-status wildlife species were inserted (moved from the previous page), and scientific names for each species was inserted into the text.

On page 3-182, a brief description of an avian risk assessment and results was added as paragraph 1. In paragraph 2, the scientific names of several species were inserted into the text.

On page 3-209 in paragraph 6, the number of RCAs that would be crossed by Alternative 2a was increased from 28 to 94, and the statement "Sixty-six of these are the same as those in Alternative 2; a separate 28 are distinct to Alternative 2a" was inserted into the text.

12.2.5 CHAPTER 4

Beginning on page 4-9 in paragraph 5 and continuing onto page 4-10, the following paragraph was inserted about emissions: "To address the General Conformity Rule, the specific requirements determined to be necessary for the proposed Project in order to complete construction activities on NFS lands and public lands managed by the BLM have been included in the analysis. Emissions taken into account in the analysis include transportation and support requirements occurring outside of NFS lands and public lands managed by the BLM necessary to complete the activities on NFS lands and public lands managed by the BLM, which include indirect emissions as defined in 40 CFR 93.152. On-site air pollutant emissions during construction would principally consist of exhaust emissions from heavy-duty diesel- and gasoline-powered construction equipment, as well as fugitive particulate matter from earthmoving and material handling operations, which include direct emissions as defined in 40 CFR 93.152. Off-site exhaust emissions would result from workers commuting to and from the job site, as well as from trucks delivering material and equipment to the job sites within USFS and BLM lands. Both the proposed Project's direct and indirect emissions, as required by statute (40 CFR 93.153(b)), are included in the construction emission estimates."

On page 4-11, Table 4.2.1-3, the Air Quality mitigation measures were heavily revised between Draft and Final versions. The final measures are copied below.

"*AIR-2a*

- ARB-certified and agency-approved (on federal lands) non-toxic soil binders shall be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction (as allowed by responsible agencies such as the USFS and BLM) to reduce fugitive dust emissions. Other watering products, selected from lists available from the Environmental Protection Agency's

(EPA's) Environmental Technology Verification program or the SCAQMD, may be applied per manufacturer recommendations in place of the ARB-certified soil binders if such products can be reasonably demonstrated to be as effective as the ARB-certified non-toxic soil binders and be approved by the affected federal agency.

- Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8-hour work day]; OR Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour. Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface, to reduce fugitive dust emissions.
- All vehicle tires shall be inspected, are to be free of dirt, and washed as necessary before entering paved roadways. In lieu of washing vehicle tires, the construction contractor may sweep roads on a regular basis or employ similar methods to reduce dust track-out.
- Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit unpaved areas.
- Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard.
- Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) as appropriate or otherwise create stabilized surfaces on all unpaved areas at each of the construction sites after active construction operations have ceased.
- Increase the frequency of watering unpaved surfaces under active construction to more than three times daily, or implement other additional fugitive dust mitigation measures, to all active disturbed fugitive dust emission sources as required by SCAQMD Rule 403 before wind events.)
- Travel routes to each construction site shall be developed to minimize unpaved road travel.
- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- Prevent spillage when hauling loose material by limiting speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.

AIR-2b

Properly Maintain Mechanical Equipment. The construction contractor shall ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturer's specifications to the extent feasible, and is maintained to perform at ARB and/or EPA certification levels. The construction contractor shall prevent tampering with equipment. This measure will be verified through unscheduled inspections.

AIR-2d

Restrict Diesel Engine Idling to Five Minutes. In accordance with LADWP's Environmental Affairs Bulletin 2007-05 dated March 12, 2007, and in accordance with the requirements of the ARB's idling regulations, vehicles with a gross vehicle weight rating (GVWR) of greater than 10,000 pounds "shall not idle the vehicle's primary diesel engine for greater than five minutes at any location." This measure will be verified by LADWP through unscheduled inspections. The five-minute idling limit does not apply for the period during which:

- Idling must occur due to traffic conditions.
- Idling when the vehicle is queuing that at all times is more than 100 feet from any real property zoned for individual or multifamily housing units that has one or more such units on it.
- Idling when forced to remain motionless due to immediate adverse weather conditions.
- Idling to verify that the vehicle is in safe operating condition.
- Idling is required for mandatory resting, servicing, repairing, or diagnostic purposes."

On page 4-12, Table 4.2.1-3, the Air Quality mitigation measures were heavily revised between Draft and Final versions. The final measures are copied below.

"*AIR-2e*

Schedule Deliveries Outside of Peak Traffic Hours. All material deliveries to the marshalling yards and from the marshalling yards to the construction sites shall be scheduled outside of peak traffic hours (6:00 to 9:30 a.m. and 3:30 to 6:30 p.m.) to the extent feasible, and other truck trips during peak traffic hours shall be minimized to the extent feasible. Construction scheduling will be planned to minimize vehicle trips.

AIR-2f

Off-road Diesel-fueled Equipment Standards.

During Project construction, all internal combustion engines/construction equipment operating on the Project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the following:

- January 1, 2012 to December 31, 2014: all offroad diesel-powered construction equipment greater than 50 hp shall meet Tier 3 offroad emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations.
- Post-January 1, 2015: All offroad diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by ARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations.
- A copy of each unit's certified tier specification, BACT documentation, and ARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.
- Encourage construction contractors to apply for AQMD "SOON" funds. Incentives will be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean up of offroad diesel vehicles, such as heavy duty construction equipment.
- Alternative fuels such as natural gas and electricity shall be used where available and feasible.

This measure will be implemented through development of administrative controls, including:

- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking;

- Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and
- Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which the construction contractor will minimize impacts to these populations (e.g., locate construction equipment and staging zones away from sensitive receptors and building air intakes).
- Provide advanced notification to sensitive receptors of the potential effects of PM10 and PM2.5, as well as toxic air contaminants, prior to construction."

On page 4-12, Table 4.2.1-3, the Air Quality mitigation measure 2f was heavily revised. The final version is above. The original version read: "**Off-road Diesel-fueled Equipment Standards.** All off-road construction diesel engines not registered under ARB's Statewide Portable Equipment Registration Program, which have a rating of 50 horsepower (hp) or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed diesel particulate filter (soot filter), unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. Equipment properly registered under and in compliance with ARB's Statewide Portable Equipment Registration Program are in compliance with this mitigation measure."

On page 4-16 in paragraph 5, text was inserted regarding the installation of spherical marker balls on ground wires and concluding that this would not significantly affect the impact assessment for any of the action Alternatives because they would be installed in places where the conductors are at least 200 feet above ground level.

On page 4-53 in paragraph 2, the following text was inserted: "These practices are included in the description of the Project as General Practices GP-60, GP-61, and GP-62."

On page 4-54, paragraph 5 was inserted. It says that the installation of spherical marker balls may result in additional use of aerial lifts or helicopters in these areas but because they are short-term and limited in nature they are not expected to exceed noise significance thresholds or change the noise impact assessment.

On page 4-67 in paragraph 7, the following text was inserted: "ROW outside of existing utility corridors."

On page 4-244, Table 4.2.9-2, VIS-18, text was inserted to expand on the types of permanent Project-related components that would fall under this mitigation measure. Additional types include drains, culverts, and bridges.

A new section titled "**Comparison of Lattice Steel Towers and Tubular Steel Poles**" was added beginning on page 4-248 under Table 4.2.9-3. This new section describes the visual characteristics of lattice steel towers and tubular steel poles and compares the potential visual impacts of each type. It includes a new figure (Figure 4.2.9-1) on page 4-250 showing both structure types in the same corridor.

On page 4-252, paragraphs 5 and 6, which continue onto page 4-253, comprise a new section:
"*Marker Ball Installation*
As a result of Federal Aviation Administration (FAA) consultation, there is potential for the installation of ground wire safety marker (aviation) balls on wires in areas where they are over 200 feet above ground level, typically at canyon crossings. The location of these areas will not be known until detailed design is completed for the Project, at which time the FAA would be consulted to ensure marking standards and requirements are implemented for the Project (see *Conductor Installation* under Section 2.4.2).

"The presence of the 36-inch diameter marker balls on the ground wires would draw attention to the transmission line conductor wires, causing additional visual impacts. The marker balls would likely be an alternating solid orange, white, or yellow color, which provides the greatest visibility against all backgrounds. These colors would also highly contrast against the sky and landscape backdrop. The degree of marker ball impacts would depend on the proximity of the marked line in relation to high-concern or sensitive viewpoints. Many of the roads and trails within the ANF and elsewhere in the Project area follow canyons and drainages and, therefore, sensitive viewpoints would probably be crossed in these areas. In these canyon areas, the structures would be typically located in an elevated (superior) viewing condition, and sometimes would not be visible or in the viewing orientation of the sensitive viewer, while the conductor lines may be. While transmission line conductor wires may be noticeable, but not dominant, within the viewshed of sensitive viewpoints if the wires are not marked, installation of the 36-inch diameter balls would substantially increase the potential visual impacts of the Project and the dominance of the wire alignment. In addition, the installation of the balls would negate or reduce the effectiveness of General Practices or mitigation measures implemented to minimize the visual impacts of the transmission line and structures (such as the use of non-specular conductors, structure darkening, and placing structures at maximum distance from roads and trails when spanning). On the ANF, the presence of the marker balls would further reduce the resulting Scenic Integrity of the landscape and potential compliance with ANF SIO, depending on the distance from High Concern viewpoints and dominance/contrast of the marker balls in the viewshed (see Visual Resources Technical Report, Tables 15 and 16)."

On page 4-285, paragraph 2, text was inserted to state that implementation of fire prevention measures, including vegetation clearing, would require the simultaneous implementation of all other appropriate Project mitigation measures.

On page 4-286, Table 4.2.11-1, F-2b, text was revised to say that Red Flag Warning events are issued by the National Weather Service and the Los Angeles County Fire Department, not just by the National Weather Service.

On page 4-331, paragraph 6, text was inserted to clarify that the new transmission lines on Alternative 2a would be outside of the existing utility corridors.

On page 4-354 in Table 4.3.1-1, BIO-1, part 1a, text was inserted to clarify that the biologist responsible for documenting community types and vegetation acreage must also be approved by the Bureau of Land Management (BLM). In BIO-1, part 1a, text was also deleted requiring replacement trees to be planted or transplanting sites to be approved before any trees could be removed. In BIO-1, part 1a 1), the word "prepare" was replaced with "review and approve" as pertains to the role of the Forest Service (USFS) and BLM with the Project's Habitat Restoration and Revegetation Plan; whereas the plan was previously to be drafted by agencies in discussion with LADWP, it will now be drafted by LADWP in coordination with the federal agencies.

On page 4-355 in Table 4.3.1-1, BIO-1, part 1a 1), text was inserted to state that restoration will not adversely affect listed species or critical habitat and that protection measures will be implemented during restoration. In BIO-1, part 1a 2), text requiring USFS and BLM approval for seeding on their land was deleted. In BIO-1, part 1a 3), text was inserted to clarify that only oaks and native trees over 3 inches diameter at breast height (DBH) would be considered for impacts, and the word "qualified" was replaced with "authorized" as pertains to the arborist. In BIO-1, part 1a 4), text stating that trees from 1 to 5 inches DBH would be replaced at a 3:1 ratio was replaced with trees from 3 to 5 inches DBH. In addition, the word "qualified" was replaced with "authorized" as pertains to the arborist.

On page 4-356 in Table 4.3.1-1, BIO-1, part 1a 6), text was inserted to clarify that restoration success criteria will be outlined in the restoration plan. Text requiring a ten-year monitoring period was revised to require remediation activities until success criteria have been met. Text discussing funding for land acquisition into the ANF was revised to also include acquisition into BLM lands. In Table BIO-MM-1 the instance of "Disturbed/developed" was revised to read "Barren/developed."

On page 4-357, Table BIO-MM-1, all instances of "Disturbed/developed" were revised to read, "Barren/developed."

On page 4-358, Table 4.3.1-1, BIO-2, part 2a, text was inserted requiring the Weed Control Plan to be consulted on with the California Department of Fish and Game (CDFG) on species protected by the California Endangered Species Act (CESA). Text was also inserted requiring a site-specific National Environmental Policy Act (NEPA) analysis prior to pesticide use, and ensuing Weed Control Plan stipulations were revised to not include the adjective "adaptive." In BIO-2, part 2a 2), text requiring a licensed applicator for restricted use herbicides was deleted. Additional text was inserted pertaining to methodology of herbicide application and the implementation of no-herbicide buffers.

On page 4-359, Table 4.3.1-1, BIO-2, part 2a 2), the words "agency botanist" were replaced with "authorized botanist." In BIO-2, part 2a 3), text was inserted to clarify that weed control success criteria will be in the Weed Control Plan. In BIO-2, part 2a 4), the requirement for weed-free seed and straw was changed to be "when available." In BIO-2, part 2a 5), BLM approval was added into multiple areas along with USFS, and additional vehicle washing clarification was added. In BIO-2, part 2b, which continues onto page 4-360, additional weed removal stipulations were inserted, and the phrase "qualified plant ecologist" was replaced with "authorized plant ecologist."

On page 4-360, Table 4.3.1-1, BIO-2, part 2c, additional weed control stipulations were added, and the phrase "qualified plant ecologist" was replaced with "authorized plant ecologist." In

BIO-2, part 2d, text was inserted to state that "on BLM lands, herbicide use will be guided by an approved, site-specific Pesticide Use Proposal." In BIO-3, additional streambed permit requirements were added. In BIO-3, part 3a, text restricting LADWP from working in RCAs without USFS approval was removed. In BIO-3, part 3b, the phrase "qualified resource specialist" was replaced with "authorized biologist," and the 10-foot exclusion zone around RCAs was changed to be an "appropriate" exclusion zone.

On page 4-361, Table 4.3.1-1, BIO-5, part 5a, the phrase "authorized" was added before the word "biologists." In addition, text was inserted pertaining to the discovery of federally listed species within the area of potential effect and appropriate follow-up actions. The text reads: "If federally listed species are found within the area of potential effect, the authorized biologist shall notify the construction manager and the USFWS. The construction manager, in consultation with the USFWS and the authorized biologist, will have the authority to halt all activities until appropriate avoidance measures have been completed. If non-federal special-status species are found within the area of potential effect, the USFS, BLM, and CDFG will be notified and, in consultation with these agencies, agreed-upon appropriate actions to address impacts to the species will be implemented. This only applies to species that are not listed under the California Endangered Species Act (CESA) unless authorized by an Incidental Take Permit (ITP) or not fully protected under Fish and Game Code or Title 14, California Code of Regulations (CCR)." Deleted text is as follows: "If individuals are found within the area of potential effect, they will be relocated to areas (as authorized by the Biological Opinion for federally listed species) that are not potentially impacted by the Project." In BIO-5, part 5b, all instances of the phrase "qualified biologist" were replaced by "authorized biologist." In addition, stipulations were added requiring excavated areas to be covered if left overnight, and requiring agencies to be notified if dead or injured special-status species are found in the Project area. In BIO-6, the phrase "qualified biologist" was replaced with "authorized biologist," and in BIO-6, part 6a, BLM was added to two instances of text pertaining to USFS authority.

On page 4-362, Table 4.3.1-1, BIO-6, part 6a, the phrase "Project biologist" was replaced with "authorized biologist." In BIO-6, part 6b, text pertaining to road kill was deleted. In BIO-6, part 6c, the phrase "Project biologist" was replaced with "authorized biologist."

On page 4-363, Table 4.3.1-1, BIO-13, part 13a, the phrase "qualified biologist" was replaced with "authorized biologist."

On page 4-364, Table 4.3.1-1, BIO-14, part 14b, the phrase "qualified biologist" was replaced with "authorized biologist."

On page 4-365, Table 4.3.1-1, BIO-14d and 14e, all instances of the word "biologist" or the words "qualified biologist" were replaced with "authorized biologist." In BIO-14, part 14f, text was inserted requiring LADWP to apply for an Incidental Take Permit if take of State-listed species is expected to occur during Project construction. In BIO-15, part 15c, all instances of the word "biologist" or the words "qualified biologist" were replaced with "authorized biologist."

On page 4-366, Table 4.3.1-1, BIO-15, part 15e, the words "qualified biologist" were replaced with "authorized biologist." In BIO-16, part 16d, text pertaining to off-site mitigation was deleted.

On page 4-367, Table 4.3.1-1, BIO-19, text was deleted that restricted Project-related activities between February 1 and August 15 or until California spotted owl (*Strix occidentalis occidentalis*) chicks have fledged. In BIO-21, part 21a 1), text was added requiring mine features to also be surveyed for bats.

On page 4-368, Table 4.3.1-1, BIO-21, part 21b, text requiring notification of CDFG if active bat hibernacular or nurseries are present in construction areas was revised to require notification of appropriate agencies. Text was also added to prevent construction in these areas without approval by appropriate agencies. CDFG was added to the list of agencies required to approve the bat biologist. The title of BIO-22 was changed from "Protect special-status reptiles species" to "Protect special-status herpetofauna," and the phrase "qualified biologist" was replaced with "authorized biologist."

On page 4-369, Table 4.3.1-1, BIO-22, text was inserted with stipulations regarding exclusion fencing for herpetofauna, and the requirement was added that all non-federal biologists must have CDFG scientific collecting permits. On pages 4-369 and 4-370, Mitigation measure BIO-23 was heavily revised between the Draft and Final documents. The complete final and complete original versions are presented below due to the very large number of changes.

BIO-23 – inserted:

"*Protect desert tortoise and habitat loss.*

23a In areas of suitable desert tortoise habitat, preconstruction clearance surveys according to USFWS protocol will be conducted by authorized biologists. Surveys will be conducted by an authorized biologist and will provide 100 percent coverage of all areas to be disturbed during construction. All desert tortoise burrows and burrows constructed by other species that might be used by desert tortoises will be examined to assess occupancy of each burrow by desert tortoises and processed in accordance with the current USFWS guidelines (USFWS 2009d). If tortoise is observed or sign is found, construction activities will be monitored by a biologist authorized by the USFWS. If no tortoise sign is found, monitoring by an authorized biologist would not be required. Should a tortoise wander into non-monitored construction sites, all ground-disturbing activities will stop and a biologist approved to handle desert tortoise will be called to the site to move the tortoise out of harm's way, and the remainder of construction in desert tortoise habitat shall be monitored by an authorized biologist.

23b Vehicular traffic during construction in desert tortoise habitat will be confined to existing routes of travel to and from the Project site, and cross-country vehicle and equipment use outside designated work areas will be prohibited. Where new access is required outside of existing roads (e.g., new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction and desert tortoise clearance surveys will be conducted. During the desert tortoise active season (March to May and September to October), speed limits along Project roads shall be limited to 15 mph in desert tortoise habitat.

23c Burrows within the construction zone or along access routes shall be flagged by the authorized biologist so that the qualified biologist would be able to more easily locate them during construction. The authorized biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to ensure that desert tortoise impacts are avoided during Project construction. All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist if they cannot be avoided by Project realignment. The construction area includes the expansion area of the Barren Ridge Switching Station (235 feet) and 500 feet total or 250 feet on either side of the new 230 kV transmission line. The 250 feet on either side of the transmission line account for the access roads, spur roads, tower assembly, and installation. The staging sites and concrete batch plants will not be placed within the desert tortoise habitat.

23d Desert tortoises that are found above ground in active construction areas shall be placed out of harm's way in the shade of a shrub or other cover location by the USFWS and BLM-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least one week after placement in the new burrows to ensure their safety. If a tortoise is in a construction or maintenance area and is not moving of its own accord, activities would be halted until the authorized biologist is able to move it out of harm's way.

23e Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If the tortoise does not move within 15 minutes, the authorized biologist shall relocate the tortoise out of harm's way, but no more than 1,000 feet from its original location. Moving desert tortoise from harm's way will only occur on the transmission line portions of the Project. A desert tortoise translocation plan may be needed if desert tortoises are found within the Barren Ridge Switching Station expansion site; the authorized biologist shall contact the USFWS for guidance on developing this plan.

23f Within potential desert tortoise habitat areas, vehicles shall not exceed 20 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).

23g Tower foundations or other excavations that pose a potential to entrap or injure desert tortoise shall be inspected three times daily until the foundation or other structure is in place and the excavation is filled in. Excavations also will include an escape ramp.

23h The Project Worker Environmental Awareness Program (WEAP) will include information on desert tortoise. The program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise as it is relevant to the Proposed Action, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet and will become part of the environmental compliance permanent record.

23i A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic desert tortoise predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.

23j LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS. In construction areas that are heavily used and in potentially occupied desert tortoise habitat, work and staging areas, including the locations of the transmission line under construction, may be fenced with approved temporary desert tortoise exclusion fencing in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. An authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the USFWS, CDFG, and with the BLM when construction areas are within lands administered by the BLM. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed or conducted by an authorized biologist. The fencing will remain in place for the duration of construction activities at a particular location and will be removed when construction activities are complete.

1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist.

A desert tortoise authorized biologist will inspect the fencing on a biweekly basis to ensure that no holes develop that could allow desert tortoises to enter the work areas. If holes are found, they will be repaired immediately.

2) If a desert tortoise is found within an area that has been fenced to exclude them, activities will cease until an authorized biologist moves it out of harm's way outside of the fence, no greater than 500 meters away from its original location. At this time, the fencing will be inspected for holes, and any breaches in the fence will be immediately repaired.

23g No pets or firearms will be permitted in the work area."

BIO-23 – deleted:

"*Protect desert tortoise and habitat loss.*

23a Preconstruction clearance surveys will be conducted for desert tortoise in the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas within suitable habitat. If tortoise sign is found, construction activities should either be monitored by a tortoise biologist with a valid permit, or a tortoise-proof fence should be erected to preclude tortoise from the area of impact. If no tortoise sign is found, monitoring by a tortoise biologist would not be required. Instead, a biologist could be on call should a tortoise wander into non-monitored sites.

23b To facilitate the free movement of desert tortoises, roadbeds should not be lowered, and berms placed along dirt roads should not exceed 12 inches or a slope of 30 degrees within the area designated as a "Survey Area" in the West Mojave Plan, "Alternative A" and areas that sign or habitat was found during the preconstruction surveys.

23c Burrows within 100 feet of the construction zone shall be flagged by a person authorized by the USFWS to handle desert tortoises so that the qualified biologist would be able to more easily locate them during construction. The qualified biologist shall be on-site to monitor all construction that occurs in the vicinity of flagged burrows and to watch for desert tortoise.

23d All desert tortoise burrows or pallets in the construction area shall be excavated by the USFWS-authorized biologist.

23e A translocation plan will be approved by the wildlife agencies before removal or handling of tortoise.

23f Desert tortoises that are found above ground during construction and need to be moved from potential harm shall be placed in the shade of a shrub by the USFWS-authorized biologist. Any desert tortoise removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. Tortoises shall not be placed more than 1,000 feet from where they were found. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar size, shape, depth, and orientation as the original burrow. Desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows to ensure their safety. The authorized biologist shall be allowed some judgment and discretion to ensure that the survival of the desert tortoise is likely.

23g If a tortoise is in a construction or maintenance area and is not moving, adjacent activities would be halted until the authorized biologist is able to move it out of harm's way.

23h Any time a vehicle is parked, the ground around and under the vehicle shall be inspected for desert tortoises before the vehicle is moved. If a desert tortoise is observed, it shall be left to move on its own. If this does not occur within 15 minutes, the authorized biologist shall remove and relocate the tortoise.

23i All construction and maintenance activities in desert tortoise habitat shall be conducted between dawn and dusk.

23j Within potential desert tortoise habitat areas, vehicles shall not exceed 25 miles per hour on access roads during the period of highest desert tortoise activity (March 1 through October 31).

23k Tower foundations or other excavations that pose a potential to entrap or injure tortoise shall be inspected on a regular basis until the foundation or other structure is in place. Excavations also will include an escape ramp where appropriate.

23l A desert tortoise education program will be presented to all personnel who will be onsite at any time, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will be presented in English and Spanish, if appropriate, and contain information concerning the biology and distribution of the desert tortoise and other sensitive species, its legal status and occurrence in the proposed Project area, the definition of "take" and associated penalties, the terms and conditions of this biological opinion, measures designed to minimize the effects of construction activities, the means by which employees can facilitate this process, and reporting requirements to be implemented when tortoises are encountered or in cases of non-compliance with the Biological Opinion. The name of each individual trained will be recorded on a sign-in sheet.

23m A litter-control program will be implemented to reduce the attractiveness of the area to opportunistic predators such as desert kit fox, coyotes, and common ravens. Trash and food items will be disposed of properly in predator-proof containers with re-sealing lids. Trash containers will be emptied, and construction waste will be removed daily from the Project area and disposed of in an approved landfill.

23n LADWP shall report any observations of raven predation on desert tortoises in the Project area to CDFG and USFWS.

23o Temporary tortoise-proof fencing will be installed on all areas of known tortoise habitat boundaries to ensure impacts are minimized to the maximum extent possible. An initial tortoise clearance of the fence line will be conducted before fence construction.

1) Temporary fencing should consist of 1-inch mesh or 1-inch horizontal by 2-inch vertical mesh (hardware, cloth or plastic) and be installed flush with the ground and extend at least 18 inches above-ground. Temporary tortoise-proof fencing should not be buried. In areas of high rodent activity where plastic mesh is used, temporary fencing may need more frequent monitoring to ensure no breaches exist."

On page 4-371, Table 4.3.1-1, BIO-24, part 24b, all instances of the phrase "qualified biologist" were replaced with "authorized biologist."

On page 4-372, Table 4.3.1-1, BIO-24, part 24c 5), the phrase "USFS-approved biologist" was inserted as a requirement. In BIO-24, part 24c, text requiring the biologist to conduct additional surveys for California red-legged frog (*Rana draytonii*) if determined in concurrence with agencies was revised to say that the biologist shall halt construction and report to agencies immediately if frogs are detected. In BIO-24, part 24c 9), text requiring the biologist to halt construction and consult with agencies if frogs are found was deleted. In BIO-24, part 24c 12), text restricting work to daylight hours except during emergencies was deleted. In BIO-24, part 24c 13), the phrase "qualified biologist" was replaced with "authorized biologist."

On page 4-374, paragraph 2 was inserted. It discusses the use of spherical marker balls on ground wires, how several studies have indicated that avian collisions decrease where spherical marker balls are used, how these would only be used on BRRTP on conductor spans over 200 feet above ground level, and how any associated reduction in collisions is most likely to affect common species like the red-tailed hawk (*Buteo jamaicensis*) or American kestrel (*Falco sparverius*), but may also affect less common or protected species like Swainson's hawk (*Buteo swainsoni*).

On page 4-376 in Table 4.3.1-2, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-378 in Table 4.3.1-3, the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-379 in paragraph 2, the number of special-status plant species that could occur on the new 230 kV circuit was included (13), and their common and Latin names were inserted as a list. Paragraph 4, which continues onto page 4-380, is a new paragraph that discusses what actions may be taken under BIO-13 (Protect special-status plant species and their habitat) and how plant transplantation may affect the transplanted plants and their new environment. Alternatively, plants may be transferred to the appropriate regulatory agency for handling.

On page 4-384, the word "six" was replaced with the word "ten," pertaining to the maximum allowed wind speed during herbicide application by spray equipment.

On page 4-385 in paragraph 3, text was inserted to better clarify where the California condor (*Gymnogyps californianus*) is known to occur in the Project area's vicinity. Text was also inserted describing the potential for short-term avoidance of construction areas due to loud noises and the kinds of noise reduction measures that LADWP would enforce, as well as text describing how the new 230 kV circuit would be added onto existing towers and, combined with Avian Power Line Interaction Committee (APLIC) (2006) avian safety standards, would not be expected to appreciably increase any collision or electrocution risks to California condors.

On page 4-386 in paragraph 1, the mitigation measure BIO-7 (Impacts to raptors) was removed from the list of mitigation measures that pertain to California condor.

On page 4-388 in paragraph 4, text was inserted to clarify that although bald eagle and peregrine falcon could occur around Castaic Lake and Castaic Lagoon, there are no records for either along the entire new 230 kV circuit corridor.

On page 4-389 in paragraph 3, text was inserted to clarify that there are no records of California legless lizard (*Anniella pulchra*) around the new 230 kV circuit corridor. In paragraph 4, text was inserted discussing the potential for animal relocation under mitigation measure BIO-22 (Protect special-status herpetofauna), including the potential effects on relocated animals and on their new environments.

On page 4-390 in paragraph 1, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In paragraph 3, which continues onto page 4-391, text was inserted to state that under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing may be used in areas where California red-legged frog is widely distributed, that any detected frogs would be relocated by a permitted biological monitor, and that relocation may increase stress on individual frogs and affect the carrying capacity in their new environment.

On page 4-391 in paragraph 4, text was inserted to clarify that California spotted owl is not known to be present in any of the areas that were surveyed for it in 2008 and 2009.

On page 4-392 in paragraph 3, text was inserted to state that there is limited suitable habitat for coast horned lizard along the new 230 kV circuit corridor, and in two instances the words "reptile species" were replaced with "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraph 4 was inserted and states that under BIO-22, horned lizards may be relocated out of construction areas, and lists the potential effects to the relocated lizards and their new environments.

On page 4-393 in paragraph 1, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In paragraph 2, text was inserted to clarify that California gnatcatchers were detected near the Castaic Lake boat launch ramps in 2010 and 2011 and that suitable habitat is located east of Castaic Lake. In paragraph 3, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to California gnatcatcher, and in paragraph 4, text was inserted to clarify that suitable habitat for coastal rosy boa (*Lichanura trivirgata roseofusca*) and two-striped garter snake (*Thamnophis hammondii*) is located primarily in areas close to San Francisquito and Charlie Canyons.

On page 4-394 in paragraph 1, text was inserted to clarify that two-striped garter snake is known to occur in Fish Canyon, but that there is a lack of known perennial streambeds that could support this species throughout the year. Paragraph 2 was inserted to discuss relocation of snakes under BIO-22 (Protect special-status herpetofauna), the effects on the relocated snakes, and the effects on their new environments. In paragraph 3, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22. Paragraph 4, which continues onto page 4-395, is a new paragraph that discusses the potential for grasshopper sparrow (*Ammodramus savannarum*) to occur on the new 230 kV circuit and potential construction-related effects to it.

On page 4-395, paragraph 2 is a new paragraph that discusses applicable mitigation measures to reduce short-term or long-term effects to grasshopper sparrow. In paragraph 3, the word "near" was replaced with the words "just west of" to better clarify the location of a known least Bell's vireo (*Vireo bellii pusillus*) record, and text was inserted to state that there is no other suitable habitat for this species near the new 230 kV circuit corridor.

On page 4-396 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to least Bell's vireo. In paragraph 3, text was inserted to better clarify known locations of loggerhead shrike (*Lanius ludovicianus*) on or near the new 230 kV circuit corridor, as well as text stating that LADWP would avoid construction near nesting birds.

On page 4-397 in paragraph 1, the mitigation measure BIO-11 (Reduce avian collisions with and electrocutions on transmission lines) was inserted to the list of measures pertaining to loggerhead shrike. Paragraph 3 is a new paragraph that discusses criteria for the construction of replacement bat roosts and potential effects that replacement sites may have on existing bat populations or the surrounding environment.

On page 4-398 in paragraph 2, text was inserted to better clarify the location of a known San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) record, as well as to state that suitable habitat is present throughout the new 230 kV circuit corridor. Paragraph 4, which continues onto page 4-398, is a new paragraph that discusses the potential for tricolored blackbird (*Agelaius tricolor*) to occur on the new 230 kV circuit corridor and potential construction-related effects to it.

On page 4-399, paragraph 2 is a new paragraph that discusses applicable mitigation measures that would reduce short-term or long-term effects to tricolored blackbird. In paragraph 3, text was inserted to better clarify the location of known western spadefoot toad (*Spea hammondii*) records, to clarify that this species was believed to have been heard during Project surveys but was not confirmed with a visual identification, and to discuss relocation of spadefoots under BIO-22 (Protect special-status herpetofauna), the effects on the relocated individuals, and the effects on their new environments.

On page 4-400 in paragraph 1, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In addition, paragraphs 3 and 4 are new paragraphs that discuss the potential for white-tailed kite (*Elanus leucurus*) to occur on the new 230 kV circuit corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-402 in Table 4.3.1-5, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-403 in Table 4.3.1-6, the cells with "Disturbed/Developed" were revised to "Barren/developed."

On page 4-404 in Table 4.3.1-6, the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-407 in paragraph 5, text was inserted to better clarify the location of American badger (*Taxidea taxus*) burrows that were identified during surveys for Southern California Edison's Antelope-Pardee Project.

On page 4-408 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to California gnatcatcher. In paragraph 3, which continues onto page 4-409, the following text was inserted regarding desert tortoise (*Gopherus agassizii*): "Preconstruction surveys would be conducted within suitable areas in the Project area; burrows within the Project area would be excavated and tortoises relocated, while burrows within 100 feet of the construction zone would be flagged for avoidance and monitoring during construction. Exclusion fencing would be installed along the construction boundaries to keep tortoises from entering the area during construction. Permanent habitat loss would occur as a result of the construction of new transmission towers and new access roads, resulting in decreased forage and vegetative cover for tortoises in the area. Because tortoises may use desert washes as habitat, excessive disturbance to these areas as a result of construction would degrade and possibly reduce habitat further. LADWP would be required to minimize disturbance and vegetation removal to the extent necessary to complete construction and would be restricted to the approved Project area. Since vegetation re-growth is a slow process in this arid climate, creosote bushes large enough to provide good cover would take a decade to revegetate the area."

On page 4-409, paragraph 2 is new and discusses potential direct effects to desert tortoise, including increased predation and increased stress related to manual relocation, as well as relocation criteria. The bulleted species list in paragraph 3, which continues onto page 4-410, was revised to include Latin names, as well as the following additional species: grasshopper sparrow, mountain plover (*Charadrius montanus*), Le Conte's thrasher (*Toxostoma lecontei*), tricolored blackbird, and white-tailed kite.

On page 4-410 in paragraph 4, text was inserted to better clarify the location of suitable habitat and known occurrences of the burrowing owl (*Athene cunicularia*) along the reconductoring corridor.

On page 4-411, paragraph 2 was inserted to discuss relocation of burrowing owls under BIO-16 (Protect burrowing owl), the effects on the relocated owls, and the effects on their new environments. In paragraph 4, which continues onto page 4-412, text was inserted to better clarify where the California condor is known to occur in the vicinity of the reconductoring corridor. Text was also inserted describing the potential for short-term avoidance of construction areas due to loud noises and the kinds of noise reduction measures that LADWP would enforce.

On page 4-412 in paragraph 2, the mitigation measure BIO-7 (Impacts to raptors) was deleted from the list of measures pertaining to the California condor. In paragraph 3, text was inserted to better clarify the location of a known population of California red-legged frogs in the vicinity of the reconductoring corridor.

On page 4-413 in paragraph 3, text was inserted to state that under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing may be used in areas where California red-legged frog is widely distributed, that any detected frogs would be relocated by a permitted biological monitor, and that relocating may increase stress on individual frogs and affect the carrying capacity in their new environment.

On page 4-414 in paragraph 2, text was inserted to better clarify the location of suitable habitat for California spotted owl within the reconductoring corridor. In paragraph 3, text was inserted to better clarify the location of known records of coast horned lizard in the vicinity of the reconductoring corridor. In addition, the words “reptile species” were replaced with the word “herpetofauna” in BIO-22 (Protect special-status herpetofauna).

On page 4-415 in paragraph 1, text was inserted to better clarify the locations of records and suitable habitat for coastal rosy boa, San Bernardino ringneck snake (*Diadophis punctatus modestus*), and two-striped garter snake. Paragraph 2 was inserted to discuss relocation of snakes under BIO-22 (Protect special-status herpetofauna), the effects on the relocated snakes, and the effects on their new environments.

On page 4-416 in paragraph 1, text was inserted to better clarify the location of Project surveys that detected desert kit fox (*Vulpes macrotis arsipus*) sign. In paragraph 2, text was inserted to better clarify known locations of golden eagle (*Aquila chrysaetos*), Swainson’s hawk (*Buteo swainsoni*), and peregrine falcon (*Falco peregrinus*) in the vicinity of the reconductoring corridor.

On page 4-417, paragraphs 3 and 4 are new paragraphs that discuss the potential for grasshopper sparrow to occur on the reconductoring corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-418, paragraphs 1 and 2 are new paragraphs that discuss the potential for Le Conte’s thrasher to occur on the reconductoring corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it. In paragraph 3, text was inserted to better clarify the location of suitable habitat for least Bell’s vireo, southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus*).

On page 4-419 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo. In paragraph 3, text was inserted clarifying the location of a record of loggerhead shrike on the reconductoring corridor.

On page 4-420 in paragraph 1, text was inserted to better clarify the locations of available habitat on the reconductoring corridor to support Mohave ground squirrel (*Spermophilus mohavensis*), southern grasshopper mouse (*Onychomys torridus ramona*), and Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*). Text was also inserted to clarify the location of an unconfirmed sighting of a San Diego black-tailed jackrabbit.

On page 4-421, paragraphs 2 and 3 are new paragraphs that discuss the potential for mountain plover to occur on the reconductoring corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it. In paragraph 4, text pertaining to the potential for pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis*), and western red bat (*Lasiurus blossevillii*) to occur was replaced with text that discussed more specific locations where suitable habitat is located.

On page 4-423, paragraph 4, which continues onto page 4-424, was inserted to discuss relocation of southwestern pond turtles (*Actinemys marmorata pallida*) under BIO-22 (Protect special-status herpetofauna), the effects on the relocated turtles, and the effects on their new environments.

On page 4-424 in paragraph 2, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraphs 3 and 4, which continue onto page 4-425, are new paragraphs that discuss the potential for tricolored blackbird to occur on the new reconductoring corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-426 in paragraph 2, the mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program) was inserted to the list of measures applicable to the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*). Paragraph 4, which continues onto page 4-427, was inserted to discuss relocation of western spadefoot toads under BIO-22 (Protect special-status herpetofauna), the effects on the relocated spadefoots, and the effects on their new environments.

On page 4-427 in paragraph 2, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraphs 3 and 4, which continue onto page 4-428, are new paragraphs that discuss the potential for white-tailed kite to occur on the reconductoring corridor, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-431 in paragraph 5, text was inserted to better clarify the locations of suitable habitat around the Haskell Canyon Switching Station for coast horned lizard.

On page 4-432, paragraph 2 was inserted to discuss relocation of horned lizards under BIO-22 (Protect special-status herpetofauna), the effects on the relocated lizards, and the effects on their new environments. In paragraph 3, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In paragraph 4, text was inserted to better clarify the location of suitable habitat around the Haskell Canyon Switching Station to support pallid bat and Townsend's big-eared bat.

On page 4-433, paragraph 2 is a new paragraph that discusses criteria for the construction of replacement bat roosts and potential effects that replacement sites may have on existing bat populations or the surrounding environment. Paragraph 4, which continues onto page 4-434, is a new paragraph that discusses the potential for white-tailed kite to occur around the Haskell Canyon Switching Station and potential construction-related effects to it.

On page 4-434, paragraph 2 is a new paragraph that discusses applicable mitigation measures that would reduce short-term or long-term effects to white-tailed kite.

On page 4-437 in paragraph 2, text was inserted discussing desert tortoise home range loss in the vicinity of the Barren Ridge Switching Station expansion. In addition, the word "qualified" was replaced with the word "authorized" as pertains to a desert tortoise biological monitor, and text was inserted to discuss relocation of tortoises under BIO-23 (Protect desert tortoise and habitat loss), the effects on the relocated tortoises, and the effects on their new environments.

On page 4-438, paragraphs 2 and 3 are new paragraphs that discuss the potential for Le Conte's thrasher to occur around the Barren Ridge Switching Station expansion area, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-440 in Table 4.3.1-9, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-445, paragraph 2 is a new paragraph that discusses what actions may be taken under BIO-13 (Protect special-status plant species and their habitat) and how plant transplantation may affect the transplanted plants and their new environment. Alternatively, plants may be transferred to the appropriate regulatory agency for handling.

On page 4-447 in paragraph 5, the number of herbicides proposed for Project use was changed from seven to eight.

On page 4-449 in paragraph 2, text was added to clarify locations of known records of American badger near Alternative 1. In paragraph 3, which continues onto page 4-450, text was added to clarify the location of known California condor activity around Alternative 1, and to discuss the potential for electrocutions and collisions on Alternative 1.

On page 4-450 in paragraph 1, text was inserted describing the potential for short-term avoidance of construction areas due to loud noises and the kinds of noise reduction measures that LADWP would enforce. In paragraph 2, the mitigation measure BIO-7 (Impacts to raptors) was deleted from the list of measures that are applicable to the California condor. In paragraph 3, text was inserted clarifying the location of known records of desert tortoise.

On page 4-451 in paragraph 1, text was inserted to discuss relocation of tortoises under BIO-23 (Protect desert tortoise and habitat loss), the effects on the relocated tortoises, and the effects on their new environments. Paragraph 3 is a new paragraph that discusses tortoise density within the Western Mojave Recovery Unit and the location of the Project in relation to Desert Wildlife Management Areas, the Desert Tortoise Natural Area, and areas of varying potential to support desert tortoise.

On page 4-452, paragraph 1 is a new paragraph that discusses known records of desert tortoise near Alternative 1, the potential of the Project to affect the local tortoise population, and effects related to the potential manual relocation of tortoises during construction. The bulleted species list in paragraph 3, which continues onto page 4-453, was revised to include Latin names, as well as the following additional species: grasshopper sparrow, mountain plover, Le Conte's thrasher, tricolored blackbird, and white-tailed kite.

On page 4-454 in paragraph 2, text was inserted to better clarify where suitable habitat and known burrowing owl burrows are located along Alternative 1. In paragraph 3, text was inserted to better clarify the location of a coast horned lizard occurrence.

On page 4-455 in paragraph 1, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraph 2 was inserted to discuss relocation of horned lizards under BIO-22 (Protect special-status herpetofauna), the effects on the relocated lizards, and the effects on their new environments. In paragraph 3, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In paragraph 4, text was inserted to better clarify the location of California gnatcatchers identified during non-focused Project surveys around Castaic Lake and of suitable habitat located east of Castaic Lake.

On page 4-456 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to California gnatcatchers. In paragraph 3, text was inserted to better clarify the location of suitable habitat for coastal rosy boa along Alternative 1. Additional text was inserted to discuss relocation of snakes under BIO-22 (Protect special-status herpetofauna), the effects on the relocated snakes, and the effects on their new environments.

On page 4-457 in paragraph 2, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). In paragraph 3, text was inserted to better clarify the location of sign and habitat for desert kit fox along Alternative 1.

On page 4-458, paragraphs 2 and 3 are new and discuss the potential for grasshopper sparrow to occur on Alternative 1, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it. Paragraph 4, which continues on page 4-459, is new and discusses the potential for Le Conte's thrasher to occur on Alternative 1, as well as potential construction-related effects to it.

On page 4-459, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher.

On page 4-460 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to least Bell's vireo. In paragraph 3, text was inserted to better clarify the location of a record of loggerhead shrike on Alternative 1.

On page 4-461 in paragraph 3, text was inserted to better clarify the locations of known records of Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit.

On page 4-462, paragraph 3, which continues onto page 4-463, is new and discusses the potential for mountain plover to occur on Alternative 1 and potential construction-related effects to it.

On page 4-463, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to mountain plover.

On page 4-464, paragraph 2 is a new paragraph that discusses criteria for the construction of replacement bat roosts and potential effects that replacement sites may have on existing bat populations or the surrounding environment. In paragraph 3, text describing the potential of coastal rosy boa to occur on Alternative 1 was deleted. Paragraph 4, which continues onto page 4-464, is a new paragraph that discusses the potential for tricolored blackbird to occur on Alternative 1 and potential construction-related effects to it.

On page 4-465, paragraph 2 is a new paragraph that discusses applicable mitigation measures that would reduce short-term or long-term effects to tricolored blackbird. In paragraph 3, text was inserted clarifying the location of a known western spadefoot toad record near Alternative 1. Paragraph 4, which continues onto page 4-466, was inserted to discuss relocation of spadefoots under BIO-22 (Protect special-status herpetofauna), the effects on the relocated spadefoots, and the effects on their new environments.

On page 4-466 in paragraph 2, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraphs 3 and 4, which continue onto page 4-467, are new paragraphs that discuss the potential for white-tailed kite to occur on Alternative 1, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-469 in Table 4.3.1-10, the cell with "Known Special-Status Plant Species" was revised to include the words "on ANF lands" at the end of it.

On page 4-470 in Table 4.3.1-10, the cell with "Mapped Weed Species" was revised to include the words "on ANF lands" at the end of it, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-471 in paragraph 3, text was inserted to clarify that 50 RCAs could be affected on Alternative 2 by Project construction.

On page 4-474 in paragraph 3, "Forest Service Manual 2080" was corrected to "Forest Service Manual 2900." In paragraph 5, text was inserted to clarify that American badger burrows identified during surveys for Southern California Edison's Antelope-Pardee Project were located within the Antelope Valley.

On page 4-475 in the bullets in paragraph 2, which continues onto page 4-476, the species list was revised to include Latin names and also to add the following species: grasshopper sparrow, mountain plover, Le Conte's thrasher, tricolored blackbird, and white-tailed kite.

On page 4-477 in paragraph 2, text was inserted to better clarify the location of burrowing owl habitat and burrows. In paragraph 3, text was inserted to better clarify where the California condor is known to occur in the vicinity of the Alternative 2. Text was also inserted describing the potential for short-term avoidance of construction areas due to loud noises and the kinds of noise reduction measures that LADWP would enforce.

On page 4-478 in paragraph 1, text was inserted discussing the potential for California condors to collide with the transmission lines on Alternative 2. In paragraph 2, the mitigation measure BIO-7 (Impacts to raptors) was deleted from the list of measures pertaining to California condor. In paragraph 3, text was added to clarify the locations of suitable California spotted owl habitat on or near Alternative 2.

On page 4-479 in paragraph 2, text was inserted clarifying the locations of known coast horned lizard records on Alternative 2. In paragraph 3, text was inserted clarifying the locations of an occurrence of coastal rosy boa and suitable habitat for two-striped garter snake.

On page 4-480, paragraph 2 was inserted to discuss relocation of snakes under BIO-22 (Protect special-status herpetofauna), the effects on the relocated snakes, and the effects on their new environments. In paragraph 4, text was inserted to better clarify the location of desert kit fox sign and habitat identified on Alternative 2 during Project surveys.

On page 4-481 in paragraph 2, text was inserted to better clarify the location of an occurrence of Swainson's hawk on Alternative 2.

On page 4-482 in paragraph 1, the words "golden eagle" were added where they had previously been excluded.

On page 4-482 paragraphs 2 and 3 are new and discuss the potential for grasshopper sparrow to occur on Alternative 2, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it. Paragraph 4, which continues onto page 4-483, is new and discusses the potential for Le Conte's thrasher to occur on Alternative 2 and potential construction-related effects to it.

On page 4-483, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to Le Conte's thrasher. Text that was previously in front of paragraph 3 and discussed the level of detail that would be given to each analysis and how species would be grouped together, where logical, was deleted. In paragraph 3, text was inserted to better clarify the location of habitat that is suitable for least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo.

On page 4-484 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo. In paragraph 3, text was inserted to better clarify the location of an occurrence of loggerhead shrike on Alternative 2.

On page 4-485 in paragraph 1, text was inserted to better clarify the locations of habitat and/or occurrences of Mohave ground squirrel, southern grasshopper mouse, Tehachapi pocket mouse, and San Diego black-tailed jackrabbit on or near Alternative 2. Paragraph 3, which continues onto page 4-486, is new and discusses the potential for mountain plover to occur on Alternative 2 and potential construction-related effects to it.

On page 4-486, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to mountain plover. Paragraph 5, which continues onto page 4-487, is new and discusses the potential for tricolored blackbird to occur on Alternative 2 and potential construction-related effects to it.

On page 4-487, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to tricolored blackbird. Paragraph 4, which continues onto page 4-488, is new and discusses relocation of western spadefoot toads under BIO-22 (Protect special-status herpetofauna), the effects on the relocated spadefoots, and the effects on their new environments.

On page 4-488 in paragraph 2, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraph 3, which continues onto page 4-488, is a new paragraph that discusses the potential for white-tailed kite to occur on Alternative 2 and potential construction-related effects to it.

On page 4-489, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to white-tailed kite.

On page 4-492 in paragraph 3, text was inserted to clarify that California red-legged frogs are also known to occur within the critical habitat unit LOS-1 located in San Francisquito Canyon.

On page 4-493, paragraph 2 is a new paragraph that discusses how under mitigation measure BIO-24 (Protect arroyo toad and California red-legged frog), exclusion fencing may be used in areas where California red-legged frog is widely distributed, that any detected frogs would be relocated by a permitted biological monitor, and that relocation may increase stress on individual frogs and affect the carrying capacity in their new environment.

On page 4-494 in paragraph 1, text was inserted describing a known record of southwestern pond turtle on Alternative 2, as well as locations of suitable habitat. Paragraph 2 is a new paragraph that discusses relocation of turtles under BIO-22 (Protect special-status herpetofauna), the effects on the relocated turtles, and the effects on their new environments.

On page 4-495 in paragraph 2, text was inserted to clarify that no botanical surveys have occurred along the temporary transmission line corridor that is associated with Alternative 2.

On page 4-496 in paragraph 2, "Forest Service Manual 2080" was revised to "Forest Service Manual 2900." In Table 4.3.1-11, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-498 in paragraph 1, text was inserted stating that there are a total of 66 RCAs shared between Alternatives 2 and 2a and that an additional 28 RCAs are located on Alternative 2a alone, all 28 of which would be affected by Project construction.

On page 4-499 in Table 4.3.1-12, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed." In paragraph 1 after Table 4.3.2-12, which continues onto page 4-500, text was inserted clarifying that botanical surveys on Alternative 2a were only conducted on access roads where Alternative 2a splits from Alternative 2 and that botanical surveys were not conducted along the actual right-of-way due to a lack of access through the thick vegetation.

On page 4-500 in paragraph 3, the number of special-status plant species that could occur, but are not known to occur, within the Alternative 2a impact corridor was changed from three to 61. Following this and continuing onto page 4-501 the 61 plants are listed.

On page 4-502 in paragraph 2, "Forest Service Manual 2080" was revised to "Forest Service Manual 2900." In paragraph 4, text was inserted to clarify that American badger burrows were identified in the Antelope Valley during surveys conducted for Southern California Edison's Antelope-Pardee Project. In paragraph 5, text was inserted stating that California Natural Diversity Database records for desert tortoise are primarily in an area shared by all Alternatives.

On page 4-503 in the bullets for paragraph 2, which continue onto page 4-504, the species list was revised to include Latin names and also to add the following species: grasshopper sparrow, mountain plover, Le Conte's thrasher, tricolored blackbird, and white-tailed kite.

On page 4-504 in paragraph 2, text was inserted to better clarify the location of burrowing owl habitat and known records. In paragraph 3, text was inserted to better clarify the locations of known California condor activity around the Project area. The mitigation measure BIO-7 (Impacts to raptors) was also deleted from the list of measures that are applicable to the California condor. In paragraph 4, which continues onto page 4-505, text was inserted to better clarify more specific locations where suitable California spotted owl habitat occurs on Alternative 2a.

On page 4-505 in paragraph 3, text was inserted to better clarify where known coast horned lizard occurrences were on Alternative 2a.

On page 4-506 in paragraph 2, text was inserted to better clarify the location of a known coastal rosy boa occurrence as well as suitable habitat for two-striped garter snake on Alternative 2a.

On page 4-507 in paragraph 1, text was inserted to state that desert kit fox sign and habitat was identified in the Mojave Desert. In paragraph 2, an analysis of golden eagle for Alternative 2a was added in where it had previously been left out, and text clarifying the location of a Swainson's hawk occurrence was inserted. Paragraph 3, which continues onto page 4-508, is a new paragraph that discusses the potential for grasshopper sparrow to occur on Alternative 2a, the potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-508, paragraph 2 is a new paragraph that discusses the potential for Le Conte's thrasher to occur on Alternative 2a, the potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it. In paragraph 3, the text "within the ANF" was changed to "in San Francisquito Canyon north of the northern terminus of the old San Francisquito Road," relating to the location of suitable least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo habitat.

On page 4-509 in paragraph 2, the mitigation measure BIO-8 (Avoid nesting season and limit disturbance of nesting birds) was deleted from the list of measures pertaining to least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo. In paragraph 3, text was inserted to better clarify the location of a loggerhead shrike occurrence.

On page 4-510, paragraph 2 is a new paragraph that discusses the potential for mountain plover to occur on Alternative 2a, the potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-511, paragraph 2 is a new paragraph that discusses the potential for tricolored blackbird to occur on Alternative 2a, the potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-512 in paragraph 1, the words "reptile species" were replaced with the word "herpetofauna" in BIO-22 (Protect special-status herpetofauna). Paragraph 2 is a new paragraph that discusses the potential for white-tailed kite to occur on Alternative 2a, the potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-513 in paragraph 5, mitigation measures that are applicable to arroyo chub were inserted that had previously been excluded. In paragraph 6, text was inserted to clarify that California red-legged frogs are known to occur within critical habitat unit LOS-1 near Alternative 2a.

On page 4-514 in paragraph 1, mitigation measures that are applicable to California red-legged frog were inserted that had previously been excluded. In paragraph 2, text was inserted to better clarify known occurrences and suitable habitat on Alternative 2a for southwestern pond turtle; in addition, mitigation measures that are applicable to southwestern pond turtle were inserted that had previously been excluded.

On page 4-517 in Table 4.3.1-13, the cells with "Known Special-Status Plant Species" and "Mapped Weed Species" were both revised to include the words "on ANF lands" at the end of each, and the cell with "Disturbed/Developed" was revised to "Barren/developed."

On page 4-518 in paragraph 4, text was inserted to clarify that botanical surveys on Alternative 3 were conducted mostly on the ANF.

On page 4-520 in paragraph 4, "Forest Service Manual 2080" was revised to "Forest Service Manual 2900."

On page 4-521 in paragraph 2, text was inserted to clarify that American badger burrows identified during surveys for Southern California Edison's Antelope-Pardee Project were located within the Antelope Valley. In paragraph 3, mitigation measures that are applicable to desert tortoise were inserted that had previously been excluded.

On page 4-522 in the bullets in paragraph 1, the species list was revised to include Latin names and also to add the following species: golden eagle, grasshopper sparrow, mountain plover, Le Conte's thrasher, tricolored blackbird, and white-tailed kite. In paragraph 2, text was inserted to better clarify the location of burrowing owl habitat and burrows on Alternative 3. In paragraph 3, text was inserted to better clarify a more specific location for California condor occurrence data around Alternative 3.

On page 4-523 in paragraph 1, mitigation measures that are applicable to California condor were inserted that had previously been excluded. In paragraph 2, text was inserted to better clarify locations of coast horned lizard occurrences. In paragraph 3, text was inserted to describe the locations of habitat and known records of coastal rosy boa and two-striped garter snake.

On page 4-524 in paragraph 3, the text that described the nearby California legless lizard records was revised to include a wider area and to give a better description.

On page 4-525, paragraph 2 is new and discusses relocation of legless lizards under BIO-22 (Protect special-status herpetofauna), the effects on the relocated lizards, and the effects on their new environments. In paragraph 4, text was inserted to clarify that desert kit fox habitat and sign was identified in the Mojave Desert.

On page 4-526 in paragraph 2, golden eagle was added to the effects analysis where it had been previously excluded. In addition, text was inserted to clarify that Swainson's hawk habitat is in the Antelope Valley. Paragraph 3, which continues onto page 4-527, is a new paragraph that discusses the potential for grasshopper sparrow to occur on Alternative 3 and potential construction-related effects to it.

On page 4-527, paragraph 2 is new and discusses applicable mitigation measures that would reduce short-term or long-term effects to grasshopper sparrow. Paragraph 3 is a new paragraph that discusses the potential for Le Conte's thrasher to occur on Alternative 3, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-528 in paragraph 2, text was inserted to better clarify the location of Mohave ground squirrel habitat and occurrences and southern grasshopper mouse habitat. Paragraph 3, which continues onto page 4-529, is a new paragraph that discusses the potential for mountain plover to occur on Alternative 3, potential construction-related effects to it, and applicable mitigation measures that would reduce short-term or long-term effects to it.

On page 4-530 in paragraph 2, text was inserted to discuss relocation of southwestern pond turtles under BIO-22 (Protect special-status herpetofauna), the effects on the relocated turtles, and the effects on their new environments. Paragraph 4, which continues onto page 4-531, is a new paragraph that discusses the potential for tricolored blackbird to occur on Alternative 3 and potential construction-related effects to it.

On page 4-531, paragraph 2 is a new paragraph that discusses applicable mitigation measures that would reduce short-term or long-term effects to tricolored blackbird. In paragraph 3, text was inserted to state that unarmored threespine stickleback has been recorded south of Bouquet Reservoir both inside and outside of the ANF.

On page 4-532 in paragraph 1, the mitigation measure BIO-6 (Implement a Worker Environmental Awareness Program) was inserted to the list of measures applicable to the unarmored threespine stickleback. In paragraph 2, text was inserted to clarify that western spadefoot toad has been recorded in Mint Canyon near Alternative 3, and the words “reptile species” were replaced with the word “herpetofauna” in BIO-22 (Protect special-status herpetofauna). Paragraph 3, which continues onto page 4-533, is a new paragraph that discusses the potential for white-tailed kite to occur on Alternative 3 and potential construction-related effects to it.

On page 4-533, paragraph 2 is a new paragraph that discusses applicable mitigation measures that would reduce short-term or long-term effects to white-tailed kite.

On page 4-538 underneath Table 4.3.1-14, text was inserted to state that botanical surveys were conducted within the ROW only where the ROW was safely and easily accessible and that numbers in the table only represent the surveyed area.

On page 4-567 in bullet 1 of paragraph 3, the word “blue-line” was replaced with “intermittent and ephemeral.”

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On page 5-3 in paragraph 4, the statement “April 2008, the commencement of environmental review under CEQA or NEPA, has been utilized as the threshold for a given action to be considered a present or reasonably foreseeable future action” was inserted into the text. Additionally, text was inserted to clarify that the list of cumulative projects was current as of March 2012.

On page 5-5, the original Figure 5-1 was deleted and replaced with an updated Figure 5-1 that reflects the addition of approximately 20 projects. All of the projects listed in Table 5-1 are reflected on this map.

On page 5-8 in paragraph 1, the status dates of both reasonably foreseeable projects and approved or present projects have been changed from April 2011 and July 2011 to March 2012.

On page 5-9, the original Table 5-1 was deleted and replaced with an updated table.

Table 5-1, deleted:

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Application to Kern County deemed complete on Aug. 2010
Alta Wind Energy Center: Alta-Oak Creek Mojave Project	Wind Turbine	800 MW	9,175	Kern County	Approved by Kern County Dec. 2009
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	4,782	Kern County	Final EIR released June 2011
AV Solar Ranch One	Solar Photovoltaic	230 MW	1,955	Los Angeles County	Approved by Los Angeles County in Sept. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW	7,472	Kern County	Draft EIR released July 2011
Clearvista Wind Project	Wind Turbine	40 MW	226	Kern County	Final EIR released June 2011
Edwards Air Force Base Solar Project	Solar	500 MW	3,288	Kern County	Lease execution anticipated 2012
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Final EIR released June 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Application submitted Nov. 2010
North Sky River Wind Project	Wind Turbine	326 MW	1,330	Kern County	Draft EIR released May 2011
Pacific Wind Energy Project	Wind Turbine	151 MW	8,300	Kern County	Approved by Kern County Oct. 2010
Pahnamid Wind Energy Project	Wind Turbine	411 MW	7,106	Kern County	Notice of Preparation for a Draft EIR filed April 2011
PdV Wind Energy Project	Wind Turbine	300 MW	5,820	Kern County	Approved by Kern County July 2008
Pine Canyon Wind Project	Wind Turbine	150 MW	12,000	Kern County	On Hold
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Completed
RE Distributed Solar Project	Solar Photovoltaic	221 MW	1,709	Kern County	Notice of Preparation for a Draft EIR filed Jan. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	234 MW	2,745	Kern County	Notice of Intent to prepare a EIS/EIR filed Jan. 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Sand Canyon Wind Projects	Wind Turbine	40 MW	300	Kern County	Notice of Preparation of a Draft EIR filed Oct. 2010
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project	Wind Turbine	65 MW	1,007	Kern County	Approved by Kern County April 2009

Table 5-1, inserted:

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Absolutely Solar CUP 11-02	Solar	3.4 MW	18	City of Lancaster	Planning Commission Approved Sept. 2011
Alpine Solar	Solar Photovoltaic	92 MW	800	Los Angeles County	Approved by Los Angeles County Oct. 2011
Alpine Solar Addition	Solar Photovoltaic	No additional MW	35	Los Angeles County	Approved
Alta East Wind Project	Wind	300 MW	3,660	Kern County	Notice of Preparation of Draft EIS/EIR filed July 2011
Alta Wind Energy Center: Alta-Oak Creek Mojave Project; Alta Addendum I; Alta Addendum II	Wind Turbine	800 MW; No additional MW; 330	9,175; 1; 4,610	Kern County	Approved by Kern County Dec. 2009; Approved by Kern County June 2010; Approved by Kern County Dec 2010
Alta Wind Infill II Project	Wind	530 MW	5,185	Kern County	Approved by Kern County Oct. 2011
Antelope Solar 1	Solar Photovoltaic	10 MW	111	Los Angeles County	Early Environmental Review
Antelope Solar 2	Solar Photovoltaic	10 MW	80	Los Angeles County	Early Environmental Review
Antelope Solar Farm	Solar Photovoltaic	20 MW	320	Los Angeles County	Early Environmental Review
Antelope Valley Solar Project	Solar Photovoltaic	650 MW	4,642	Kern County/ Los Angeles County	Approved March 2012
AV Solar Ranch One	Solar Photovoltaic	230 MW	2,100	Los Angeles County	Approved by Los Angeles County in Sept. 2010
Avalon Wind Project	Wind	255 MW	10,000	Kern County	Application to Kern County deemed complete on July 2010; Request for Proposal underway
Barren Ridge Type II	Wind	Unknown	10,665	T310S R360E & 370E	Project authorized for testing; NEPA Analysis approved; ROW grant issued
Beacon Solar Energy Project	Concentrated Solar	250 MW	2,012	Kern County	Application for Certification approved Aug. 2010; DEIR anticipated 2nd quarter 2012
Bent Tree Wind Farm Type II	Wind	Unknown	528	Kern County	Project authorized for testing; NEPA Analysis approved; ROW grant issued

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Blue Sky Wind Energy	Wind Turbine	225 MW	7,500	Los Angeles County	Notice of Preparation for a Draft EIR filed Sept. 2011
Catalina Renewable Energy Project	Wind Turbine & Solar Photovoltaic	350 MW (Wind: 200; Solar: 150)	7,440	Kern County	Approved by Kern County Dec. 2011
Clearvista Wind Project	Wind Turbine	20 MW	226	Kern County	Approved by Kern County Sept. 2011
Del Sur Solar Project CUP 10-22	Solar	39 MW	180	City of Lancaster	Planning Commission Approved February 2011
Edwards Air Force Base Solar Project	Solar	Unknown	3,288	Kern County	Lease execution anticipated 2012
Golden Square Type II	Wind	Unknown	584	Kern County	Project authorized for testing; ROW grant issued; Compliance check for tower placement completed
Lower West Wind Energy Project	Wind Turbine	14 MW	185	Kern County	Final EIR released June 2011
Monte Vista Solar Array	Solar Photovoltaic	126 MW	1,040	Kern County	Notice of Preparation for a Draft EIR filed March 2010
Morgan Hills Wind Project	Wind	230 MW	3,604	Kern County	Approved by Kern County Oct. 2011
North Sky River Wind Project	Wind Turbine	300 MW	12,781	Kern County	Approved by Kern County Sept. 2011
Oak Creek/Sun Creek Type II	Wind	Unknown	1,546	T350S R320E	Project authorized for testing; NEPA analysis approved; ROW grant issued
Pacific Wind Energy Project; Pacific Wind Addendum	Wind Turbine	151 MW	8,300; 1,325	Kern County	Approved by Kern County Oct. 2010; Approved by Kern County April 2011
PdV Wind Energy Project; PdV Addendum	Wind Turbine	300 MW	5,820; 2,423	Kern County	Approved by Kern County July 2008; Approved by Kern County March 2010
Pine Tree Solar Project	Solar Photovoltaic	10 MW	75	Kern County	Preliminary planning
Pine Tree Wind & Expansion	Wind Turbine	135 MW	n/a	Kern County	Completed
Power Partners Type II	Wind	Unknown	1,530	T100N R150W	Project authorized for testing; NEPA analysis approved; ROW grant issued
RE Distributed Solar Project	Solar Photovoltaic	174 MW	2,048	Kern County	Approved by Kern County Dec. 2011
Ridge Rider Solar Park Project	Solar Photovoltaic	38 MW	475	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rising Tree Wind Farm	Wind Turbine	285 MW	3,278	Kern County	Notice of Preparation/Notice of Intent of a Draft EIS/EIR filed July 2011
Rosamond Solar Array	Solar Photovoltaic	155 MW	1,177	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Rosamond Solar Project	Solar Photovoltaic	120 MW	960	Kern County	Approved by Kern County Nov. 2010
Ruby Solar	Solar Photovoltaic	20 MW	160	Los Angeles County	Early Environmental Review
Silverado Power CUP 11-03	Solar	10 MW	67	City of Lancaster	Planning Commission Approved Sept. 2011

Project Name	Project Type	Approximate Generation	Area (acres)	Location	Status
Silverado Power CUP 11-05	Solar	20 MW	80	City of Lancaster	Planning Commission Approved September 2011
Silverado Power CUP 11-07	Solar	30 MW	160	City of Lancaster	On Hold
Soledad Mountain Wind	Wind	Unknown	1,228	Kern County	Project authorized for testing; NEPA analysis approved; ROW grant issued
Southwest Type II	Wind	Unknown	7,245	Kern County	Project authorized for testing; NEPA analysis approved; ROW grant issued
Sunshine Solar	Solar	40 MW	319	Kern County	Application to Kern County deemed complete in Sept. 2010
TUUSS0 Solar Project CUP 10-03	Solar	20 MW	216	City of Lancaster	Planning Commission Approved June 2010
Tylerhorse Wind Project	Wind Turbine	60 MW	1,100	Kern County	Notice of Intent to prepare a EIS filed July 2011
Wildflower Green Energy Farm	Wind Turbine & Solar Photovoltaic	300 MW	3,708	Los Angeles County	Notice of Extension of Comment Period for Notice of Preparation of Draft EIR Nov. 2011
Willow Springs Solar Array Project	Solar Photovoltaic	160 MW	1,402	Kern County	Notice of Preparation of a Draft EIR filed March 2010
Windstar Wind Energy Project; Windstar Addendum I	Wind Turbine	65 MW	1,007; 1	Kern County	Approved by Kern County April 2009; Approved by Kern County July 2010

On page 5-12 in paragraph 1, the date of July 2011 has been changed to March 2012.

On page 5-13, Table 5-2 was deleted and replaced with an updated table, as shown below.

Table 5-2, deleted:

Serial Number	Applicant	Date Application Received/ ROW Grant Issued/ Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 44611	Alta Windpower Dev, LLC	5/27/03	1,546	Wind: Pending for testing	Kern County
CACA 45553	Power Partners SW, LLC	1/18/2006	1,530	Wind: Pending for testing	Kern County
CACA 49577	Power Partners SW (enXco)	8/10/07; NOD 8/2/10	276	Wind: Pending for testing	Soledad area
CACA 50171	AES Seawest, Inc.	7/3/08	139	Wind: Pending for testing	Kern County
CACA 51016	Advanced Dev Services, Inc	4/30/09	11,174	Wind: Pending for testing	Kern County
CACA 51561	Power Partners Southwest, LLC	12/11/09	1,200	Wind: Pending for testing	Kern County
CACA 52309	enXco Development	3/19/10	275	Wind: Pending for development	Tehachapi area, Kern County

Serial Number	Applicant	Date Application Received/ ROW Grant Issued/ Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 52537	Alta WindPower, Dev	5/12/10	3,660	Wind: Pending for development	Tehachapi area, Kern County
CACA 52362	Rising Tree Wind, LLC	8/1/10	536	Wind: Pending for development	Tehachapi area, Kern County
CACA 47847	Boulevard Associates, LLC	9/20/10	9,706	Wind: Pending for testing	Tehachapi Mtns, Kern County
CACA 46978	Renewable Management Corps.	10/18/10	528	Wind: Pending for testing	Mojave
CACA 47848	Alta Windpower Dev, LLC	10/18/10	7,245	Wind: Pending for testing	Lucchese
CACA 51335	Alta Windpower 1, LLC	10/21/10	584	Wind: Pending for testing	Kern County
CACA 52477	Wind Energy, Inc.	11/12/10	125	Wind: Pending for testing	Kern County
CACA 48536	Oak Creek Energy	12/16/10	1,228	Wind: Pending for testing	Soledad Mountain Wind Project

Table 5-2, inserted:

Serial Number	Applicant	Date Application Received/ ROW Grant Issued/ Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 45386	Little Lake South Renewables, LLC	12/11/02	8,835	Wind: Pending for testing	Rose Valley/Little Lake
CACA 48537	Oak Creek Energy Systems, Inc.	6/25/06	9,279	Wind: Pending for testing	Rand Mountain
CACA 49577	Power Partners SW (enXco)	8/10/07; NOD 8/2/10	276	Wind: Pending for testing	Soledad area
CACA 50171	AES Seawest, Inc.	7/3/08	139	Wind: Pending for testing	Kern County
CACA 51454	Jawbone Canyon Power Partners	11/26/2009	47,226	Wind: Pending for testing	Jawbone Canyon
CACA 51561	Power Partners Southwest, LLC	12/11/09	1,200	Wind: Pending for development	Kern County
CACA 52309	enXco Development	3/19/10	275	Wind: Pending for testing	Tehachapi area, Kern County
CACA 52362	Rising Tree Wind, LLC	7/31/10	540	Wind: Pending for development	Golden Square
CACA 52537	Terra Gen	5/11/10	3,200	Wind: Pending for development	SE Kern County
CACA 52841	Tehachapi Wind Energy, LLC	3/31/11	1,000	Wind: Pending for testing	T270S & 280S R350E, T280S R360E &370E, T290S R370E
CACA 52842	Celtic Energy Corp.	5/6/11	5,256	Wind: Pending for testing	T320S R350E, 360E & 370E
CACA 52843	Ridgeline Power, LLC	3/30/11	1,158	Wind: Pending for testing	T50N R120W & 130W

Serial Number	Applicant	Date Application Received/ ROW Grant Issued/ Last Amended Date	Approximate Area (Acres)	Project Type	Location
CACA 52844	Ridgeline Power, LLC	3/30/11	10,029	Wind: Pending for testing	T50S & 60S R70E
CACA 52845	Ridgeline Power, LLC	3/30/11	1,444	Wind: Pending for testing	T90N R130w; T100N R130W
CACA 52848	Pacific Wind Development, LLC	3/20/11	1,000	Wind: Pending for testing	T280S R400E
CACA 53148	Ridgeline Power, LLC	7/8/11	3,164	Wind: Pending for testing	T270S R390E; T280S R390E
CACA 53158	Ridgeline Power, LLC	7/11/11	4,500	Wind: Pending for testing	T280S R410E

On page 5-14 in paragraph 2, the date of completion for a project was updated to December 2011.

On page 5-18, a discussion of Potential Mitigation for Significant Cumulative Effects was inserted into the document as Section 5.2.5.

On page 5-22 in paragraph 4, "and result in cumulatively considerable impact to nearby receptors" was deleted from the text.

On page 5-23 in paragraph 3, a statement regarding audible noise levels and City of Los Angeles noise ordinance was deleted from the text.

On page 5-24, Table 5-4 was deleted and replaced with an updated table, as shown below.

Table 5-4, deleted:

Energy Infrastructure Project	Alternative(s)
Alta-Oak Creek Mojave Wind Energy Project	1, 2, 2a, 3
Antelope Valley Solar Project	2, 2a, 3
Antelope Transmission Project (ATP) Segments 1 and 2	1, 3
Antelope Transmission Project (ATP) Segment 3	1, 2, 2a, 3
AV Solar Ranch One	2, 2a, 3
Beacon Solar Energy Project	1, 2, 2a, 3
PDV Wind Energy Project	1
Ridge Rider Solar Park Project	1, 2, 2a
Rosamond Solar Array Project	2, 2a
Tehachapi Renewable Transmission Project (TRTP) Segment 4	1, 2, 2a, 3
Tehachapi Renewable Transmission Project (TRTP) Segment 5	3
Tehachapi Renewable Transmission Project (TRTP) Segment 10	1
Willow Springs Solar Array Project	2, 2a, 3

Table 5-4, inserted:

Energy Infrastructure Project	Alternative(s)
Generation	
Absolutely Solar	3
Alta East Wind Project	1, 2, 2a, 3
Alta Wind Infill Project	1, 2, 2a, 3
Antelope Solar 1	2, 2a

Energy Infrastructure Project	Alternative(s)
Antelope Solar Farm	3
Antelope Valley Solar	1, 2, 2a, 3
Avalon Wind Project	1, 2, 2a, 3
Barren Ridge Type 2	1, 2, 2a, 3
Bent Tree Wind Farm Type II	1
Catalina Renewable Project	1
Lower West Wind	1
Oak Creek - Sun Creek Type II	1, 2, 2a, 3
Pacific Wind Addendum	1
RE Distributed Solar - Barren Ridge 1	1, 2, 2a, 3
Ridge Rider Solar Park	1, 2, 2a, 3
Rising Tree Wind	1, 2, 2a, 3
Rosamond Solar Array	2, 2a, 3
TUUSSO (TA High Desert)	3
Willow Springs Solar Array	2, 2a, 3
Transmission	
Antelope Transmission Project (ATP) Segment 3	1, 2, 2a, 3
Tehachapi Renewable Transmission Project (TRTP) Segment 4	1, 2, 2a, 3
Tehachapi Renewable Transmission Project (TRTP) Segment 5	3
Tehachapi Renewable Transmission Project (TRTP) Segment 10	1

On page 5-26 in paragraph 3, text was edited to clarify general Project measures to maximize avoidance of sensitive land uses.

On page 5-28 in paragraph 2, text was edited to clarify general Project measures to maximize avoidance of sensitive land uses.

On page 5-53 in paragraph 5, the sentence "Subsequently, this section was updated to reflect current cumulative projects for this Final EIS/EIR" was inserted into the text.

On page 5-55 in paragraph 4, a statement regarding temporary road closures on BLM lands was deleted and replaced with text stating overlapping construction timeframes could cause temporary traffic-related impacts without proper mitigation measures. Paragraph 5 was edited to clarify that with proper coordination across multiple planned projects, temporary construction-related, maintenance, and cumulative traffic impacts would be less than significant.

On page 5-56, Table 5-6 was deleted and replaced with an updated table, as shown below:

Table 5-6, deleted:

Project Type	Projects
Transmission Projects	Antelope Transmission Project; Tehachapi Renewable Transmission Project
Generation Projects (Wind and Solar)	Alta East Wind Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, Antelope Valley Solar Project, AV Solar Ranch One, Beacon Solar Energy Project, Catalina Renewable Energy Project, Clearvista Wind Project, Edwards Air Force Base Solar Project, Lower West Wind Energy Project, Monte Vista Solar Array, North Sky River Wind Project, Pacific Wind Energy Project, PdV Wind Energy Project, Pine Canyon Wind Project, Pine Tree Solar Project, Ridge Rider Solar Park Project, Rising Tree Wind Farm, Rosamond Solar Array Project, Rosamond Solar Project, Sand Canyon Wind Projects, Willow Springs Solar Array Project, Windstar Wind Energy Project, Proposed Wind and Solar projects on BLM land

Project Type	Projects
Transportation and Public Facilities	California High Speed Rail; Pacific Pipeline Storm Relocation Project and Access Road Repairs; Antelope Valley Water Bank Project, Soledad Canyon Cemex Project
Community Development	Centennial Project

Table 5-6, inserted:

Project Type	Projects
Transmission Projects	Antelope Transmission Project; Tehachapi Renewable Transmission Project
Generation Projects (Wind and Solar)	Absolutely Solar, Alpine Solar, Alta East Wind Project, Alta Wind Infill II Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project & Alta Addendum I/II, , Antelope Valley Solar Project, Antelope Solar 1 & 2, Antelope Solar Farm, AV Solar Ranch One, Barren Ridge Type II, Beacon Solar Energy Project, Bent Tree Wind Farm Type II, Blue Sky Wind Energy, Catalina Renewable Energy Project, Lower West Wind Energy Project, Oak Creek/Sun Creek Type II, Pacific Wind Energy Project, Pacific Wind Addendum, PdV Wind Energy Project/PdV Addendum, Power Partners Type II, Ridge Rider Solar Park Project, Rising Tree Wind Farm, Rosamond Solar Array, Rosamond Solar Project, Silverado Power (CUP 11-03, 11-05 & 11-07), Soledad Mountain Wind, Southwest Type II, Sunshine Solar, TUUSSO Solar Project, Tylerhorse Wind Project, Wildflower Green Energy Farm, Willow Springs Solar Array Project, Windstar Wind Energy Project, Proposed Wind and Solar projects on BLM land
Transportation and Public Facilities	California High Speed Rail; Pacific Pipeline Storm Relocation Project and Access Road Repairs; Antelope Valley Water Bank Project, Soledad Canyon Cemex Project
Community Development	Centennial Project

On page 5-59 in paragraph 6, text was inserted to clarify that the area of cumulative impacts would encompass the traditional territories of several Native American groups, and would also include a variety of historic Euroamerican occupation areas.

On page 5-61 in paragraphs 1 and 2, the number of acres of the cumulative impacts area was updated.

On page 5-64, a brief introduction to Social and Economic Conditions was inserted as paragraph 2.

On page 5-65, text detailing cumulative impacts on Social and Economic Conditions was inserted as paragraphs 3, 4, and 5.

On page 5-67, Table 5-8 was deleted and replaced with an updated Table 5-8, as shown below:

Table 5-8, deleted:

Project	Alternative
Alta East Wind Project	1, 2, 3
Alta-Oak Creek Mojave Wind Energy Project	1, 2, 3
Antelope Transmission Project--Segment 1	3
Antelope Transmission Project--Segment 2	3
Antelope Transmission Project--Segment 3	1, 2, 3
Antelope Valley Solar Project	2, 3
AV Solar Ranch One	2, 3
Avalon Wind Project	1, 2, 3
Beacon Solar Energy Project	1, 2, 3
Catalina Renewable Energy Project	1, 2, 3

Project	Alternative
Lower West Wind Project	1, 2, 3
Monte Vista Solar Array	1, 2, 3
Morgan Hills Wind Project	1
Pacific Wind Energy Project	1
PDV Wind Energy Project	1
RE Distributed Solar Project	1, 2, 3
Ridge Rider Solar Park Project	1, 2, 3
Rosamond Solar Array Project	2, 3
Tehachapi Renewable Transmission Project --Segment 4	1, 2, 3
Tehachapi Renewable Transmission Project--Segment 5	3
Tehachapi Renewable Transmission Project --Segment 10	1
Willow Springs Solar Array Project	2, 3

Table 5-8, inserted:

Project	Alternative
Absolutely Solar Project	2, 2a, 3
Alpine Solar Project	1
Alpine Solar Project Addition	1
Alta East Wind Project	1, 2, 2a, 3
Alta-Oak Creek Mojave Wind Energy Project	1, 2, 2a, 3
Antelope Solar 1 Project	2, 2a, 3
Antelope Solar 2 Project	2, 2a, 3
Antelope Solar Farm Project	2, 2a, 3
Antelope Transmission Project--Segment 1	3
Antelope Transmission Project--Segment 2	3
Antelope Transmission Project--Segment 3	1, 2, 2a, 3
Antelope Valley Solar Project	2, 2a, 3
AV Solar Ranch One	2, 2a, 3
Avalon Wind Project	1, 2, 2a, 3
Barren Ridge Type II Project	1, 2, 2a, 3
Beacon Solar Energy Project	1, 2, 2a, 3
Bent Tree Wind Farm Project	1, 2, 2a, 3
Blue Sky Wind Energy Project	2, 2a, 3
Catalina Renewable Energy Project	1, 2, 2a, 3
Del Sur Solar Project	2, 2a, 3
Golden Square Type II Project	2, 2a, 3
Lower West Wind Project	1, 2, 2a, 3
Monte Vista Solar Array	1, 2, 2a, 3
Morgan Hills Wind Project	1
Oak Creek – Sun Creek Type II Project	1, 2, 2a, 3
Pacific Wind Energy Project	1
Pacific Wind Infill Project	1, 2, 2a, 3
PDV Wind Energy Project	1
Pine Tree Wind & Pine Tree Solar Project	1, 2, 2a, 3
Power Partners Type II Project	1
RE Distributed Solar Project	1, 2, 2a, 3
Ridge Rider Solar Park Project	1, 2, 2a, 3
Rising Tree Wind Farm Project	1, 2, 2a, 3
Rosamond Solar Array Project	2, 2a, 3
Rosamond Solar Project	1, 2, 2a, 3
Ruby Solar Project	2, 2a, 3
Silverado Power Project	2, 2a, 3
Soledad Mountain Wind Project	1, 2, 2a, 3

Project	Alternative
Southwest Type II Project	1
Sunshine Solar Project	2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 4	1, 2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 5	2, 2a, 3
Tehachapi Renewable Transmission Project--Segment 10	1, 2, 2a, 3
TUUSSO (TA High Desert) Project	2, 2a, 3
Tylerhorse Wind Project	1
Wildflower Green Energy Farm Project	2, 2a, 3
Willow Springs Solar Array Project	2, 2a, 3

On page 5-71 in paragraph 1, “on all the Alternatives” was inserted in the last sentence.

On page 5-72, in the continuation of paragraph 4 from the previous page, two projects were deleted and three projects were inserted into the text.

On page 5-73 in paragraph 2, two projects were deleted and three projects were inserted into the text.

On page 5-74 in paragraph 2, two projects were deleted and three projects were inserted into the text.

On page 5-75 in paragraph 3, two projects were deleted from the texts.

On page 5-77 in paragraph 2, text was edited to clarify the magnitude of potential cumulative effects on Mohave ground squirrel. In paragraph 2, two projects were deleted from the text.

On page 5-80, in the continuation of paragraph 5 from the previous page, two projects were deleted. In paragraph 2, “reptile species” was deleted and replaced with “herpetofauna,” and the magnitude of cumulative effects has been edited from “unknown, due to limited data” to “not be significant.”

On page 5-86 in paragraph 4, “and BIO-22 (Protect special-status herpetofauna)” has been inserted into the text.

On page 5-87 in paragraph 2, the sentence “However, it was determined that the risk of collision with wind turbines to Swainson’s hawk would still be significant and unavoidable (Kern County 2009)” was inserted into the text. In paragraph 3, text was inserted to elaborate on impact determinations to the Swainson’s hawk identified by studies at wind and solar generation projects.

On page 5-88, in the continuation of paragraph 3 from the previous page, two projects were deleted from the text. In paragraph 2, “unknown, due to limited data” was deleted from the text, and text was inserted to clarify that cumulative impacts to Swainson’s hawk would be significant for Alternative 1, as opposed to the other Alternatives.

On page 5-89 in paragraph 4, a reference to BIO-8 was deleted from the text.

On page 5-90, in the continuation of paragraph 3 from the previous page, "be unknown, due to limited data" was deleted from the text and replaced with "not be significant on all the action Alternatives."

On page 5-91 in paragraph 2, "be unknown, due to limited data" was deleted from the text and replaced with "not be significant on all the action Alternatives."

On page 5-92, in the continuation of paragraph 4 from the previous page, text noting potential significant and unavoidable effects on peregrine falcons was inserted. Two projects were deleted from paragraph 1, and in paragraph 3 (continuing into page 5-93), text was inserted to clarify the potential cumulative effects on peregrine falcons.

On page 5-94, in the continuation of paragraph 3 from the previous page, one project was inserted and two projects were deleted from the text. In paragraph 3, reference to BIO-7 was deleted from the text. Additionally, "be unknown, due to limited data" was deleted from the text and text was inserted to clarify the significance of cumulative effects on California condor.

On page 5-95 in paragraph 4, "California condor" was deleted and replaced with "the bald eagle," and "be unknown, due to limited data" was deleted and replaced with "not be significant on all the action Alternatives."

On page 5-97 in paragraph 3, text was inserted so the last sentence reads "not be significant on all the action Alternatives."

On page 5-99, in the continuation of paragraph 4 from the previous page, "be deleted, due to limited data" has been deleted and replaced with "not be significant on all the action Alternatives." In paragraph 1, text was inserted to include migratory bird species protected by the Migratory Bird Treaty Act. In paragraph 2, two projects were deleted from the text.

On page 5-100, text describing the Antelope Valley Important Bird Area and discussing potential cumulative effects to avian species in this area was inserted as paragraph 1. In paragraph 3, text was inserted to include migratory bird species, and to clarify potential cumulative impacts on non-listed special-status and migratory bird species (text continues into page 5-101).

On page 5-101 in paragraph 5, unclear text was deleted and text was inserted to clarify the subject of discussion of cumulative effects to soils or distinctive geologic features.

On page 5-102 in paragraph 1, the statement "The impacts related to surface fault rupture, ground shaking, liquefaction and earthquake-induced landslides are related to earthquakes and would not be due to other projects in the BRRTP impact area" was deleted from the text. In paragraph 5, vague text referring to potential cumulative impacts to paleontological resources was deleted and replaced with a clarified description of the area of cumulative impacts for this resource (text continues into page 5-103).

12.2.7 CHAPTER 6

On page 6-1, deleted Table 6-1:

Adverse Environmental Effects that Cannot be Avoided for All Action Alternatives
Agriculture - Cumulatively significant impacts to agricultural operations as a result of Project construction and operation
Air Quality and Climate Change - Maximum daily construction emissions would exceed regional significance thresholds in 2013 and 2014
Air Quality and Climate Change - Emissions of NO$_x$ would be above the *de minimis* threshold in 2013 and/or 2014
Air Quality and Climate Change – Cumulative impacts to PM$_{10}$ emissions contribute to exceeding regional significance thresholds.
Biological Resources – Cumulative impacts to slender mariposa lily; short-joint beavertail cactus; desert tortoise; and California gnatcatcher
Cultural Resources – Effects to a National Register of Historic Places- and California Register-listed historic resource (Old Ridge Route and its contributing elements) and Olive Power Plant 1 Transmission Line (eligible for listing on the National Register; listed on California Register)
Recreation – Degradation of the Pacific Crest National Scenic Trail
Recreation – Indirectly increase unauthorized or unmanaged recreational uses that could contribute to the long-term loss or degradation of nearby recreational opportunities
Recreation – Construction impacts related to restricted access or disruption of activities within recreational areas
Transportation/Traffic – Construction activities would exceed LOS standard "D"
Visual Resources – Impact to the Pacific Crest National Scenic Trail outside and within Angeles National Forest
Visual Resources –Non-compatibility with Forest Service Scenic Integrity Objectives and reduced Scenic Integrity created as a result of the project
Visual Resources – Impacts on residences, travelers, and recreationists as a result of contrasts created by the project
Visual Resources – Cumulative impact as a result of an increase in the number of structures and structure prominence.
Water Resources – Cumulative impact on watersheds

Inserted new Table 6-1:

Adverse Environmental Effects that Cannot be Avoided for All Action Alternatives
Agriculture - Cumulatively significant impacts to agricultural operations as a result of Project construction and operation
Air Quality and Climate Change - Maximum daily construction emissions would exceed regional significance thresholds in 2013 and 2014
Air Quality and Climate Change - Emissions of NO$_x$ would be above the *de minimis* threshold in 2013 and/or 2014
Air Quality and Climate Change – Cumulative impacts to PM$_{10}$ because emissions would contribute to regional significance thresholds being exceeded.
Biological Resources – Cumulative impacts on all Alternatives to slender mariposa lily; desert tortoise; and California gnatcatcher. Cumulative impacts on Alternative 1 only to Swainson's hawk; peregrine falcon; California condor; golden eagle; and burrowing owl.
Cultural Resources – Effects to a National Register of Historic Places- and California Register-listed historic resource (Old Ridge Route and its contributing elements) and Olive Power Plant 1 Transmission Line (eligible for listing on the National Register; listed on California Register)
Recreation – Degradation of the Pacific Crest National Scenic Trail
Recreation – Indirectly increase unauthorized or unmanaged recreational uses that could contribute to the long-term loss or degradation of nearby recreational opportunities
Recreation – Construction impacts related to restricted access or disruption of activities within recreational areas
Transportation/Traffic – Construction activities would exceed Level of Service standard "D"
Visual Resources – Impact to the Pacific Crest National Scenic Trail outside and within Angeles National Forest
Visual Resources –Non-compatibility with USFS Scenic Integrity Objectives and reduced Scenic Integrity created as a result of the project
Visual Resources – Impacts on residences, travelers, and recreationists as a result of contrasts created by the project
Visual Resources – Cumulative impact as a result of an increase in the number of structures and structure prominence.
Water Resources – Cumulative impact on watersheds

On page 6-5, in Table 6-2, the phrase "blue-line streams" was replaced with "intermittent and ephemeral streams."

On page 6-6, in paragraph 3, Pine Canyon Wind Project was removed.

On page 6-9, in paragraphs 2 and 3, inserted the following two paragraphs: "Additionally, the BLM and the USFS are committed to complying with Executive Order (E.O.) 13007. E.O. 13007, issued in 1996, directs federal agencies responsible for managing federal lands to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.

Neither the USFS nor the BLM have received any information from Tribes regarding sacred sites in the BRRTP area, nor have any Tribes raised concerns about specific sacred sites during the NEPA scoping and Section 106 consultation processes. Through the ongoing consultation process, the ANF will continue to solicit and consider Native American concerns in the BRRTP impact analysis process, in the selection of a route, during implementation of mitigation measures, and during construction. Avoidance is the preferred measure for preventing impacts to cultural resources. The PA prepared by the ANF and BLM describes the process for assessing adverse effects on cultural resources, treatment of human remains, and unanticipated discoveries."

On page 6-11, in paragraph 5, added mention of the Avian Protection Plan.

On page 6-16 through page 6-19, in paragraph 4, a section titled "Supplemental Community Analysis" was inserted.

12.2.8 CHAPTER 7

On page 7-8, in paragraph 5, the phrase "intermittent and ephemeral" was added to describe stream type.

On page 7-10, the section heading was modified to include "Prior to the Publication of the Draft EIS/EIR."

On page 7-13, Table 7.7, Agency Contact Summary Table, was updated, adding and removing Agency contacts that changed since the creation of the original document.

USDI Bureau of Land Management	California Desert District Office	Elser	Lynnette	NEPA Coordinator
USDI Bureau of Land Management	Ridgecrest Field Office	Rodriguez	Paul	Realty Specialist
USDA Forest Service	Angeles National Forest	Contreras	Thomas A.	Forest Supervisor
Los Angeles County	Fire Department	Cosey	Gerald	Assistant Fire Chief
City of Palmdale	Planning	Carrillo	Juan	Assistant Planner
City of Lancaster	Planning	Swain	Jocelyn	Associate Planner

Additional changes to the table included the removal of Bill Loudermilk from the State Agencies list and the modification of Environmental Scientist Craig Bailey to Acting Regional Manager Ed Pert (both associated with the California Department of Fish and Game).

On page 7-18, in paragraph 1 under Biological Resources, substantial changes were made to the text.

Inserted:
"Section 7(a)(2) of the federal Endangered Species Act (ESA), 16 USC 1536(a)(2), requires every federal agency, in consultation with and with the assistance of the Secretary of the Interior, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. A federal agency will use a Biological Assessment (BA) to determine whether formal consultation is required."

Deleted:
"Pursuant to the federal Endangered Species Act (ESA), U.S. Fish and Wildlife Service (USFWS) has authority over projects that may result in take of a federally listed species. Under the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take. If there is a likelihood that a project would result in take of a federally listed species, either an incidental take permit, under Section 10(a) of the ESA, or a federal interagency consultation, under Section 7 of the ESA, is required."

Paragraph 2 was edited to include mention that the BA is included as Appendix H to this Final EIS/EIR. A regulatory reference was added to paragraph 3.

On page 7-19, paragraph 3 was edited to include mention that the Final PA is included as Appendix O to this Final EIS/EIR. In paragraph 5, the acronym ANF was replaced with USFS.

On page 7-20, in paragraph 1, the first sentence was deleted. In paragraph 2, text was inserted: "Concerns raised by federally recognized Tribes and non-recognized Native American groups and individuals included:"

The following bullet point was added:

- On November 4, 2011, a letter was received from the Agua Caliente Band of Cahuilla Indians stating that they had no concerns regarding the Project.

In paragraph 3, below bullet points, the following text was inserted: "In April 2012, the draft PA was submitted for formal review by SHPO staff. At the same time it was submitted to the SHPO, the draft PA was provided to participating Tribes, Native American contacts listed by the NAHC, and other interested Native American organizations, groups, and individuals for comment."

On page 7-21, in paragraph 2, mention of the regulated duration of a Draft EIR public review period was removed. In paragraph 3, text detailing the details of reviewing the Draft EIS/EIR was removed. In paragraph 4, the mailing address to send Draft EIS/EIR public review comments to was removed. In paragraph 5, Draft EIS/EIR Notification, the Project mailing list entries were updated from 6,300 to 8,057 and text was inserted stating that the Notice of Availability was sent to 630 addresses on the BRRTP email mailing list.

On page 7-22 through page 7-31, the following new sections, tables, and text were inserted: Section 7.8.5, Comments Received on the Draft EIS/EIR, Section 7.8.6, Issues Raised in Comments Received on the Draft EIS/EIR, and Tables 7-12 through 7-17.

On page 7-31, in paragraph 2, the following text was deleted: "Following consideration of the comments received during this Draft EIS/EIR comment period, a Final EIS/EIR will be prepared and circulated per NEPA and CEQA requirements, and will include responses to all comments."

12.2.9 CHAPTER 8

On page 8-3, two individuals were added: Thomas A. Contreras, Forest Supervisor, Angeles National Forest, and Peter Johnston, wildlife biologist, Angeles National Forest.

On page 8-4, in paragraph 4, two position titles were modified.

12.2.10 CHAPTER 9

Ten additional references were added to the general references section on pages 9-1 and 9-2.

On page 9-24, the Social and Economic Conditions subheading was modified to include Environmental Justice.

References were added to the following sections: Social and Economic Conditions (including Environmental Justice) (pages 9-25 and 9-26); Biological Resources (pages 9-26, 9-27, 9-28, 9-29, 9-30, and 9-32).

12.2.11 CHAPTER 10

An unused acronym was removed from the list of acronyms and abbreviations. New definitions for "Block Group," "Environmental Justice Communities," and "Project Area" were added to the glossary. A small map showing the BRRTP Project Area was added.

12.2.12 CHAPTER 11

The index was revised to update all page references as appropriate for the Final EIS/EIR. No changes were made to the list of indexed items.